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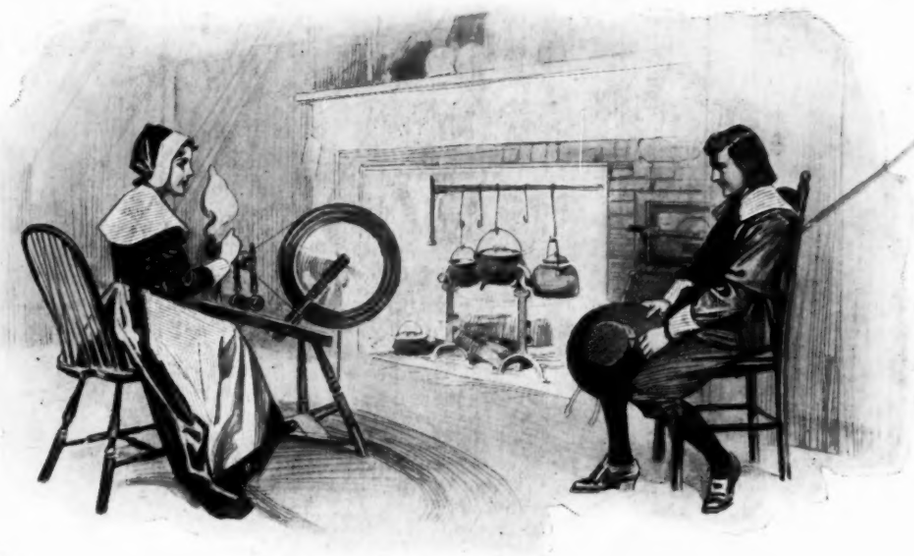

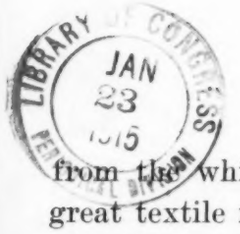

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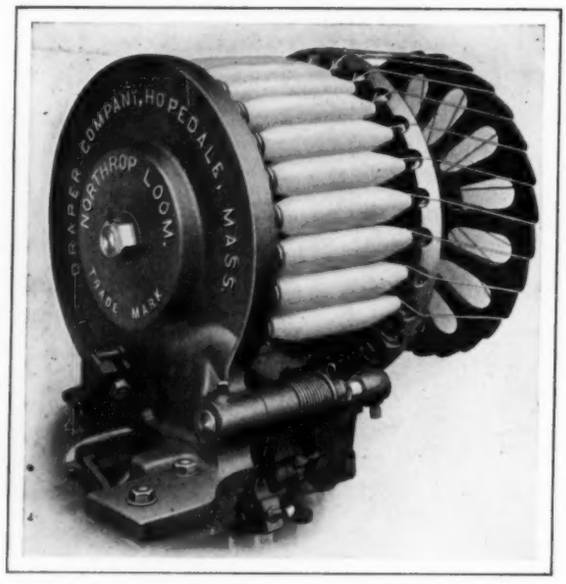

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COTTON

Published Monthly

Volume 79. **JANUARY 1915.** **Number 3.**

L. L. ARNOLD, Editor

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INFLUENCING NATIONAL LEGISLATION.

The motion picture is assisting in a large measure in the education of many people. It takes the man of limited means on a tour of foreign lands for the small sum of five cents. It shows him various industries in operation about which he has only read or heard. As an educator it has an advantage over the newspaper, inasmuch as many people will look at pictures who care little for reading. It often makes a deep impression because the pictures are created with this one particular point in view. The picture film is often prepared for the express purpose of "driving home and clinching" certain desired impressions. Because of this method of preparation the motion picture has become a powerful factor in the moulding of public opinion. Therein lies the danger of this method of education. Untruthful impressions may be and sometimes are disseminated, which the public accept as truths because they are not familiar with the actual conditions.

We are bringing this subject to the attention of the cotton manufacturers, because the cotton manufacturing industry is being misrepresented. We are advised by a correspondent located in a city in Illinois, a machinery manufacturing center, that pictures made by a well known film manufacturing corporation have recently been exhibited there, which misrepresent conditions in southern cotton mills, and that Georgia mill conditions are particularly stressed. This correspondent is a graduate of the North Carolina Agricultural and Mechanical College and has been familiar with southern cotton mill conditions for seven years and he is, therefore, well qualified to criticize.

Among other outrageous statements presented on the "cut-ins," as the printed sections shown between the pictures are called, was one saying "thousands of children are saved from a life of slavery at the loom by the passing of the Sheppard Bill." Another shows Mrs. ———— saying Representative Sheppard saved her child from slavery and thanking him while standing on the steps of the capitol in Atlanta. Another picture shows a woman and child, while the "cut-in" states that the child earned sixty-five cents every two weeks and that the mother averaged three dollars a week.

These statements have a familiar sound to the initiated. They were "among those present" when the political pot was boiling in Georgia last summer. This was the type of facts (?) that certain daily newspapers rejoiced in spreading broadcast. One such paper metaphorically frothed at the mouth because certain legislators failed to vote on the Sheppard Bill as the paper's policies dictated, and almost simultaneously congratulated the people of Georgia on the thousands of children released from slavery by that bill.

The serious side to this unfortunate manipulation of motion picture subjects is its very deleterious effect

on the industry through national legislation. Illinois, for example, has only one cotton mill of any size within its borders. Its people know little of cotton manufacturing conditions except what they may gather from motion pictures and reading. But Illinois has twenty-seven members in the House of Representatives at Washington; more than twice as many as the state of Georgia; nearly four times as many as the state of South Carolina, the leading cotton manufacturing state of the South, which has seven votes in the House. Public opinion improperly moulded in states having a large representation in Washington, has great weight in furthering insidious national legislation along these lines, some of which is even now pending.

All motion pictures are censored as to their morality before being exhibited. Would it not be equally advisable to censor all educational films as to the truth of what they portray and the authenticity of the statements made in connection therewith? We believe that every educational motion picture should unequivocally represent the truth; and that each cotton manufacturer should make it his personal duty to inform the national representative from his district of these very evident efforts to falsely mould public opinion and the reflection it is bound to have in influencing national legislation.

COTTON CLOTHING IN PROSPECT.

The recent meeting of the Board of Governors of the American Cotton Manufacturers' Association at Augusta, Ga., was made particularly interesting by a joint meeting of cotton manufacturers and railroad men to discuss the adaptability of cotton khaki goods as uniforms for warm weather use.

President T. I. Hickman, who is a strong advocate of the cotton uniform for employees in the public service, indicated his faith in the old adage, "Seeing is believing," by having on hand ten living models attired in khaki uniforms especially designed for the following occupations: municipal fire department; street car men; steam railway conductors and trainmen; policemen; private coach and automobile livery; porters' uniforms, and an ordinary working suit. There were more than twenty railroads reported as represented at the conference, and a number of these representatives expressed themselves as very favorably impressed with the appearance of, and the information advanced about these cotton suits.

From the standpoint of the employees who will wear these uniforms, only hearty cooperation can be expected. The cotton khaki for summer wear is much more comfortable than the woolen suit now in use, and the purchase price will average approximately one-third that of wool. Furthermore, and this is especially applicable in the South, every man who wears a cotton suit is assisting his home industries, not only from the cotton-growing standpoint, but also the manufacturing of the cotton into cloth, the dyeing and finishing of the cloth, and the final cutting into suits. The factories for doing this work are already established and any large increase in cotton wearing apparel would mean increased manufacturing facilities and a greater demand for labor.

There is also an effort being made to induce the wearing of cotton business suits of various colors and styles among all classes. This movement was started by the Rotary Club of Birmingham, Ala., and is understood to have the support of the affiliated Rotary Clubs of the southern states. It is a commendable effort and should meet with popular approval and support.

The wearing of woolen clothing, particularly for over garments, has become a confirmed habit with the large majority of American men. This habit will be difficult to overcome and much educational work will be necessary. It will be comfort and price versus usage. A physical and financial benefit against a mental chimera. But—and this should be italicized—Americans shoot fireworks and cripple their children on the fourth of July, and in some sections on Christmas also, for a no more substantial reason that a fanciful habit passed down from generation to generation, very like the wearing of woolen clothes.

Too many men do things because "Bill" does it. They laugh, secretly or openly, at women for trying to follow styles, but a few months ago they were all looking for a dark hat with a light band because "Bill" had one, just as a few years ago they all wore "fuzzy" head pieces for the same reason. Therefore, usage, with its twin brother, habit, are the fetiches to be overcome. They will not be conquered by any ordinary campaign; but if all those interested, and they are literally thousands in number, will quit apeing "Bill" and take "Bill's" place for others to imitate, a much greater market for cotton clothing is near at hand.

A TEXTILE MACHINERY EXHIBIT.

On Saturday evening, Dec. 12th, the Greenville (S. C.) members of the Southern Textile Association, together with the officers and past presidents of that body, attended a called meeting in the Chamber of Commerce rooms at Greenville for the purpose of electing committees to promote the proposed exhibit to be held at Greenville coincident with the November, 1915, convention of the association.

A well-prepared "Dutch" supper was served and many "talks" made by those present on being called upon for an expression by past-president T. B. Wallace, who presided as toastmaster. An epitome of these expressions could be made in one sentence, *viz*: "It's a good idea and I'll help push."

As a result of this meeting the following committees were elected:

Executive Committee:

Robert Bowe, chairman, selling agent, Saco-Lowell Co.

Edwin Howard, southern agent, Mason Machine Works.

J. H. Spencer, southern manager, Barber-Colman Company.

J. E. Sirrine, mill architect and engineer.

G. G. Slaughter, purchasing agent for 33 mills.

Milton G. Smith, southern representative, Jones and Laughlin Steel Co.

James H. Maxwell, southern agent, Keever Starch Company.

A. B. Carter, secretary ex-officio, representing Victor Shaw Traveler Co.

Auxiliary Committee:

T. B. Wallace, chairman, superintendent, Dunean Mills.

M. O. Alexander, superintendent, Woodside Cotton Mills.

T. A. Sizemore, superintendent, American Spinning Co.

R. J. Brown, superintendent, Mills Mfg. Co.
H. E. Bates, superintendent, Monaghan Mills.
W. F. Walker, superintendent, Brandon Mills.
W. C. Bobo, superintendent, Judson Mills.

Inquiries and space reservations should be addresseed to Robert Bowe, Greenville, S. C.

IDEAS AND EFFICIENCY.

BY A. M. OLIVER.

There are no miracles in business and luck cuts a very small figure. You have seen big enterprises leap out of obscurity and grow into national institutions in five or six years; you have seen, in your own town perhaps, new stores open up and get a large trade in a few months; you have watched men start at the bottom and climb to the top. No doubt you, like thousands of other men and women, have wondered how these things happen and how they are accomplished; what pull there was connected with it, or what efficient qualities of brain and energy reached from cause to effect.

Behind every business success there is a man—or men. Business institutions do not make men—men make business institutions. The kind of men that make business grow are men of ideas; men with a fresh point of view. Experience and ideas are the heart and soul of business success. Keen men know this and while they utilize the experience of others, to this experience they add ideas. They analyze the success and failure of others, and apply what they learn to their own problems.

Nothing moves forward without an idea behind it, and when the idea is creative and practical the business grows. If you want to produce more work and better work; and if you want to make money, and in the ordinary sense of the word be successful; then you must get a grip on some new ideas.

Perhaps you don't understand why this or that corporation has engaged efficiency engineers. It is said the corporation has always made money. That may be true, but competition is becoming greater and greater all the time and to stay in line and be successful your corporation must be up to date. You must run your mill at the lowest possible figure. You must elect methods that will cut costs. You must get new ideas.

The efficiency engineer has an opportunity to see how others are doing their work. He can see the right and the wrong way. He can see the most efficient way. He can correct faults, eliminate waste and thereby reduce the cost of manufacture in a factory in which, from the local viewpoint, the costs have already reached the irreducible minimum.

With competition getting keener every year the profits of a manufacturing business depends more and more upon the organization and management of the factory. This applies to the small factory as well as to the large industrial plants. An overseer once told me that he believed it was unjust to stop a man's wages when he went out of the mill for two or three hours during the day to do a little business. I asked this overseer if it ever occurred to him that he would see things in a different light if he owned the mills. He said, "But you see I don't own the mills." He didn't spend his employer's money as he would spend his own. He wanted to be a good fellow and charge it to the company. There are many men just like the man I speak of and the fact that such conditions exist make it even harder to meet competition. Men have been known to sift ashes, beat rugs, clean cellars and do various other kinds of work, and the time was charged to the company. It always seemed to me that an overseer must be blessed with an abundance of nerve to send a man out to his house to clean his cellar and charge it to his employer. Such men as these cannot be classed as efficient overseers, and it is a question whether they should be overseers at all.

Such details only emphasize the fact that we should manage a business on an efficient basis. The great emancipator said, "You can fool some of the people all the time and all the people some of the time, but you can't fool all the people all the time." You may know a lot and yet make a very small salary. A man with an excellent routine training may be able to speak three or four languages and still be unable to demand big money. The mastery of ten languages won't assure you so good an income as one good workable idea, for that is proof of a creative brain. The sort of brain that can only be taught is useful, but will never be valuable. It can be easily replaced, while the creative brain can be duplicated only with difficulty. No one can rake through a creative brain and steal the ideas contained therein, but the imitative brain is machine-like, and like machines, can be replaced. The best advice which can be given is to be original; get an idea, a workable and practical idea and you will command a bigger salary and help your corporation toward the goal of success.

INSPECTING FIRE HAZARDS.

The committee on Field Practice of the National Fire Protection Association has completed its two years' work in the compilation of an inspection manual. This publication is called field practice to distinguish it from an ordinary fire protection hand book, from which it differs radically in function. It is not a mere compilation of fire protection standards, but a hand-book designed to educate and serve the man who is undertaking inspection work, and who, possibly, has had very little previous experience. The increasing inspection of premises by uniformed members of the fire departments and by newly constituted municipal inspection bureaus has made such a hand-book imperative, covering not only standard equipments, but covering what may be called points of relaxation from the standard which the inexperienced inspector does not know how to look for. This book is designed to point out the common faults in equipments and those points of deterioration difficult for inexperienced persons to discover, with methods and suggestions for their remedy. It is, in its potential usefulness, the most important publication which the National Fire Protection Association has ever compiled.

The Association has published a list of its pamphlets, standards, bulletins, fire reports, etc., which will be sent on application to the Secretary, 87 Milk Street, Boston, Mass.

During the cotton year just closed the southern mills used nearly 22 per cent of the total crop. These figures should be increased and the total money value of the crop thereby enhanced.

A Plea for Cooperative Stores

BY H. G. WELBORN.*

There is a great future for cooperation in America. Eliminate the individualist and then cooperative societies will flourish. Now, when a new movement is started in any community, regardless of its merits, the assistance that is usually given is either prompted by the public spirit that pervades all localities in desiring to boost their apparent advantages or it is given by the individuals that expect, in some direct or indirect way, a return for everything done. It is hard to overcome selfishness. A great cause for dissatisfaction today is because the laboring class think that the distribution of profit is not in proportion to the service rendered. I am afraid that it has never been realized by the American workingman that he sells his labor at wholesale in a highly competitive market; yet buys his supplies at retail. A manufacturer who buys his supplies at retail and disposes of his finished product at wholesale soon becomes bankrupt.

Merely criticising the retailer for adding large profits to the finished articles will not help matters. We have the government's figures, which have been published only after exhaustive investigations, to prove that large and at times excessive profits are added to finished articles by the retailers; yet, in spite of these seemingly exorbitant profits, a great many retailers fail every year. A few become wealthy. They all perform some service and should be rewarded. Are they getting more for their services than is justifiable?

H. G. WELBORN.

In this article rather than attempt any direct answer to this question, it is more proper to show that there are great economic losses in the present distributing system. Retail stores are not all run on a cash basis or the equivalent. They lose a great many of their accounts. It is, therefore, necessary to penalize the punctual creditor to cover bad debts. Every patron not only pays a profit to the retailer but a proportionate share of the losses incurred by crediting the dishonest.

A still greater economic loss lies in the fact that there are too many retail stores in every community. We hear complaints about the low wages paid by retailers to their clerks and book-keepers. It is also becoming very popular to criticise the long hours that the stores remain open. I have never seen any figures showing the number of minutes each day each clerk labors, as compared with the idle moments. My observation leads me to the conclusion that the average clerk works about one-third of the time while on duty. It is not the clerk's fault, either, that he idles away his time. But this forced idleness is a waste. The owner of the store does not absorb this loss. It is charged to the customer.

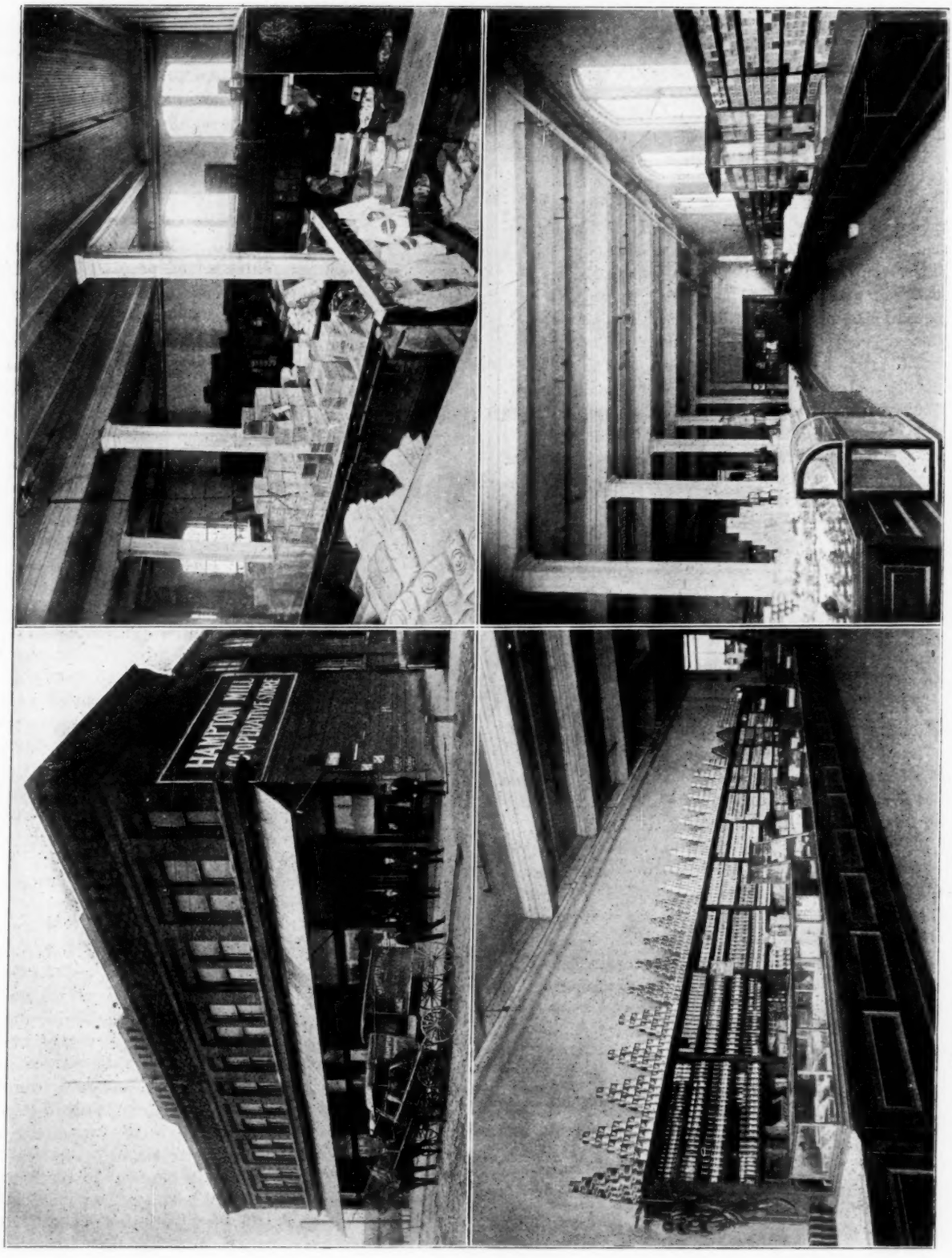
As the customer carries the burden, I favor lightening the load by substituting for competitive retail stores, large consumers' cooperative stores, not to be run for private profit, but for the good of the members.

I have been asked if it is possible to operate such stores in the southern cotton mill communities. My actual experience with a store of this kind leads me to conclude that these communities offer, in some respects, ideal conditions. In nearly every instance the southern cotton mill is either located in the country or in the suburbs of a city. The location necessarily means that the operatives are more or less segregated. On account of their being together they almost invaribly share similar opinions. The laborers at a southern cotton mill are given regular employment. Therefore, the location, similarity of opinions, and the regularity of employment, all combined, should make it easy to carry on consumers' cooperative stores at the mill villages, with reasonable assistance from the employers. When the employees fully understand that the cooperative stores are not being organized for the purpose of exploiting them, they will cooperate, for it is to their interest to do so.

At present, in a number of instances in the South, the former "company stores" have been abolished; and when they are abolished, numerous small competitive stores spring up on the outskirts of the mill villages. It is really impossible for these very small stores to furnish the quality of goods that the former company stores supplied at as low a price, because, individually, they do such a small business. For this reason a large company store, when properly managed, is better than the ill-kept small stores. Yet, regardless of the sincerity of the management of the company stores, there have always been criticisms, and I advise all mill owners to consider most seriously the advisability of starting cooperative stores, so as to assist in reducing the cost of living. It has always appeared to me that cooperative stores would benefit the operatives more than any profit sharing arrangement that can be devised. A true saying is that "Profit sharing aims to increase the total production of wealth, whereas cooperation aims to promote its more equitable distribution." Let the operatives become aware of the possibilities of cooperation and it will spread.

In the early part of the month of June, 1913, several of the superintendents of our mills in Columbia, S. C., suggested organizing a cooperative store at the mills. The

*President Hampton Cotton Mills Company.



EXTERIOR AND INTERIOR VIEWS OF THE HAMPTON MILLS COOPERATIVE STORE AT COLUMBIA, S. C.

idea appealed to me. We made a most careful analysis of the prices that our operatives were paying for various articles from the small stores and compared these prices with what larger stores were asking. There was a difference in favor of the larger store, but very few of our operatives could take advantage of the cheaper prices, because the larger stores were not in the neighborhood. Right here in passing, I want to say that too often the complaining purchaser overlooks the *cost of delivery.* The result of our investigation was explained to a mass meeting of all the operatives on Tuesday evening, June 24, 1913. So enthusiastic were the people present at this meeting that a sufficient amount of stock was immediately subscribed and a charter was applied for in a few days. This was the beginning of the Hampton Mills Cooperative Store.

As an encouragement to the operatives, on behalf of

the management of the Hampton Cotton Mills Company, I was authorized at the first mass meeting to say:

> "The management of the Hampton Cotton Mills Company look with favor upon any movement to reduce the cost of living to the employees. And if the operatives of their mills organize a cooperative store and conduct it along business lines, so that its success is assured, they will allow their present department store building to be used by the cooperative company, *rent free*. But at the same time the management of the mills want it distinctly understood that they assume no liability as to the success of the venture. However, if the store is organized every official will give his moral aid and support to the organization. Impress upon the members that thorough and complete cooperation will be necessary to insure the success of this venture, etc., etc."

Without this assistance until the store became established, our venture would have failed. The object of the store was not only explained thoroughly but incorporated in the by-laws. But it was a new thing. Knockers were numerous. Every retail store in the community laughed at the idea. Some said that it would never open its doors. Others warned their customers not to have anything to do with it, because the management of the mills were too much interested in its success. In spite of them all the cooperative store opened for business January 12, 1914. The prices were lower than those of any of our competitors, but this was regarded by many as a trick to get a good start. Our stock of goods amounted to nearly $4,000, while our paid-in capital was $5,390. It was necessary to play safe, for our store had no credit and few friends, except the members.

The sales for the first week amounted to only $519.01; the sales for the second week amounted to $896.85; and the sales for the third week amounted to $1,144.05. This gave total sales for the first three weeks in business of only $2,559.91. In this community there are 681 families who live in the mill company's houses and work in the mills. As the first three weeks' sales were only 7.31 per cent of the total pay-rolls, I can truthfully say that it did not look very rosy for the cooperators. There are about 2,000 names on our pay-rolls, of which fully 80 per cent are employed every day. As the employees were spending an average of 7.6 cents daily at their store, when the prices were lower than at other stores, the future did not look very bright. The men behind the movement kept having meetings so that encouragement could be given and before very long business began to pick up. The week ending July 11, 1914, weekly sales had increased to $1,947.07; or in other words, 16.89 per cent of the total pay-rolls was spent at the cooperative store. This was an average of over 20 cents per day from every operative at work. It was a great relief to find that when the books were closed on July 1st there was a profit of $306.25 for the first 25 weeks' work. However, the discounts for that period amounted to $289.41. It was efficiency that made the profits and not the prices charged. For the five weeks ending November 21, 1914, the average weekly sales were $2,466.71, or 20 per cent of the total pay-rolls; in other words an average of 38.2 cents spent daily at this store by each operative. The store now has nearly $2,000 surplus, has never borrowed one cent, has taken advantage of every cash discount and last, but not least, has sold at retail and delivered all goods at less than an average added profit, over the wholesale prices, of 13.85 per cent. The volume of business is sure to increase, and, as it increases, the prices will be reduced, for we find that today our cost of doing business is less than 8 per cent. This little store has a future and it has done a service not only to its members, but to all the operatives. The cooperation of the superintendents, overseers and operatives is responsible for the success.

Against every outside force cooperation can successfully battle and a field for more consumers' cooperative societies exists in all cotton mill communities. These mill operatives are not a roving class of people. More than 80 per cent of our operatives have been in our mills for over a year.

The primary object of a consumers' cooperative store at a cotton mill should be:

First: To supply its members and fellow operatives with articles for household and personal use, that are unadulterated and of good quality.

Second: To buy such articles at wholesale, taking cash discounts whenever possible; to sell these at retail for cash at wholesale prices, plus an added charge sufficient to cover operating expenses and a reasonable dividend to be later paid to the members.

Third: To divide the profits thus realized among its members in proportion as they have contributed to the production of said profit by their capital and patronage.

Fourth: To provide a safe and profitable investment for the capital saved, in small sums, by its members.

If these ideas are practiced, and efficient managers employed, every venture of this kind will succeed. Do not allow the spirit of cooperation to be side-tracked. Often the cooperative store degenerates into a joint stock company. This is tempting when great successes are made. The exclusive idea, however, must never enter a society: *always welcome newcomers.* The Cooperative Store's aim is to show the members that it is in this way that their wages can be used to greater advantage. The proof of this statement is that it is the cheapest method of distribution.

What should appeal to the southern cotton mill operatives—and it is a very encouraging fact, too—is the wonderful growth of the now world-famous Rochdale system, originated by the 28 Lancashire weavers. Sometime about 1824, Robert Owen conceived the idea of consumers cooperating. The movement received great assistance and guidance from Mr. Owen. Yet the 28 Rochdale weavers are really the pioneers in launching the first successful venture. If these weavers were successful, surely our southern cotton mill operatives can do likewise. It is an easy matter to accomplish when the community will stand together. The way to distribute retail profits is in the same proportion as they are made. Why should the laboring man continue to support the incalculable army of parasites that are now handling the wholesale and retail food stuffs? There is a way to combat the combination of wholesalers and retailers for exploiting the consumer in the distribution of foodstuffs. This way is *cooperation.*

When the laboring class of this country awake to the fact that they are supporting thousands upon thousands of parasites and then devote their surplus energy towards fighting not their employers, but those who are living upon their labor without producing anything, then and only then will the high cost of living be reduced.

A Potent Force for Business Government

BY ELLIOT H. GOODWIN.*

The Chamber of Commerce of the United States now includes in its membership six hundred commercial organizations located in every state except New Mexico, together with commercial organizations in the District of Columbia, Porto Rico, Hawaii, and the Philippines, and the American Chambers of Commerce in Paris, Berlin and Constantinople. In its individual membership, which is limited to five thousand, there are now included twenty-four hundred firms and individuals who in turn are members in good standing of some commercial organization affiliated with the National Chamber. It is representing the point of view of American business men upon all important matters affecting commerce before Congress and the Executive Departments while at the same time it is rendering regular service to its members both organization and individual in the way of assistance and information. It has already achieved a position of prominence in the national scheme of business and this has been accomplished in the brief time that has elapsed since it was first proposed at a meeting of business representatives held in Washington in April, Nineteen-twelve.

ELLIOT H. GOODWIN.

The readers of COTTON,—those who have not already done so, for many have—may to advantage pay some heed to this new national force in business life, and consider how it may properly be brought to bear upon the production, manufacture and sale of the great American staple which, because of the dominant position it occupies in both our foreign and domestic commerce, must necessarily command at all times the interest of those who plan and determine the policy of a national and comprehensive business body.

Enlightened business men in all lines of activity recognize the value and influence of the commercial organization whether it be the local chamber of commerce, board of trade and commercial club, or the trade association which devotes itself to the interests of one particular line of industry; but how many of these business men have come to appreciate the value and influence that has been added to their membership in a chamber of commerce or trade organization through the fact that that body has become a member of the Chamber of Commerce of the United States and thereby a factor in determining the business policy of the nation? Again, how many of them realize that in the office of their local or trade organization there are on file bulletins issued weekly showing the course of Congress upon the bills affecting business (a service that has never before been undertaken on a like scale) and covering the action of all federal departments and commissions which have any jurisdiction over matters affecting commerce both foreign and domestic? Finally how many of these business men understand that through the fact that they are members of a commercial organization affiliated with the National Chamber (and this fact alone) they are entitled to become individual members of the National Chamber at dues of $25.00 a year and thus receive direct at their offices all the information sent to the secretary of their organization while at the same time having at their disposal for purposes of assistance and information the expert force at the Washington office of the National Chamber?

Service is the keynote of the Chamber of Commerce of the United States; service to the business interests in general as represented through commercial organizations, service to the particular business man wherever his interests do not conflict but coincide with those of the whole. It will not permit itself to be used for selfish interests. It has repudiated lobbying methods, which have become discredited, and seeks its aim in having the national business point of view presented to Congress and the Administration, so that it will be given due weight in connection with the other interests which go to make up the economic and social life of this country, through the utmost frankness and publicity and allowing the facts when carefully gathered and fully tabulated to speak for themselves. It is through strict adherence to these principles that it has won its place and recognition.

All the vital business factors of this critical period in which we are now living and endeavoring to carry on profitable business emphasize the necessity for cooperation and the maintenance of a national business organization in touch with the Government and all its departments that have it in their power to affect commercial welfare. Even the casual student of the trend of business affairs has long since realized the steadily increased growth of the jurisdiction of the Federal Government as shown by restrictive legislation, the creation of bureaus of inquiry, the establishment of the Interstate Commerce Commission, the Federal Trade Commission with broader and more far reaching powers than any of its predecessors.

Few business men appear to have come to a realization of the powers committed to the five men who will compose the Federal Trade Commission and how the exercise of these powers will reach down through big business, which hitherto has commanded so much of the attention of the Federal Government, to the small business man,—yes, almost if not quite to the man who conducts a cross-roads

*General Secretary of the Chamber of Commerce of the United States of America.

general store. Under Section 5 of the Act approved September 26, 1914, the Commission is given power not only to investigate and determine in their discretion what constitutes "unfair methods of competition," but also to issue a restraining order against the man indulging in such practices as they determine to be unfair and to appeal to the courts for the enforcement of these orders if not complied with. Unquestionably, in some of this legislation the constructive outweighs the restrictive, notably so in the case of the Federal Reserve Act, for the enactment of which prior to the crisis engendered by the European war, even the most bitter opponents of this legislation when pending, now ungrudingly give heartfelt thanks. In other cases experience alone will show whether the administration of the law will prove more constructive than restrictive. But the question is more or less academic. The fact of the trend of legislation and of the establishment of these bureaus and commission is what the business men of the country have to face, and with it the necessity for some properly organized representative commercial body to keep these new government agencies for the regulation of business closely in touch with the broad business point of view. With this necessity in mind, the National Chamber was instrumental in securing provision in the Federal Reserve Act for an Advisory Council made up of bankers and business men, and with like purpose it will provide a committee of business men to keep in touch with the work of the Federal Trade Commission.

But it is not merely through the course of legislation that business has become more dependent upon the attitude of the National Government. A period in which production at full capacity exceeds the power of the domestic market to consume has been reached and we are on the verge of a large development of our foreign trade. This development is necessarily dependent in considerable degree on the attitude of the Government in foreign affairs; on tariffs, commercial treaties, protection for investment in foreign lands, diplomatic representations, reciprocity. With the opening of the Panama Canal, and to a much greater degree with the advent of the war in Europe, the opportunities for foreign trade which have developed out of it and the disturbances of American business which has followed from it, the dependence of the business man upon the good offices of his government has been many times emphasized. The exporter has been forcibly detached from his old customers. The machinery under which he carried on foreign trade has been upset and is now only with government aid being slowly pieced together again. He looks to the government to provide him with opportunities in new directions to make up for the markets which he has lost and to clear the way of many restrictions which stand in the path of legitimate trade with belligerent countries. Not a day goes by but members of the Chamber of Commerce staff are visiting the foreign legations, the State Department and the Department of Commerce, securing letters and documents and opinions to aid members in the shipment of their goods.

Naturally—indeed, inevitably—since the outbreak of the war the Chamber has been devoting particular attention to the development of foreign trade. Its service in this field has been direct and continuous. The regular weekly Bulletins have been made use of to furnish members with the latest obtainable, exact information regarding contraband, conditional contraband, embargoes, and moratoria, and to note all changes in these conditions as they occur.

In the midst of the general popular agitation to improve the opportunity for foreign commerce the Chamber has been specific in issuing twice a week the latest statistics regarding the exports of Germany and Austria to other countries. Beginning with the countries of Central and South America, the Bulletins of the Chamber have now covered with this information every land with which the United States can engage in foreign trade, while additional information has been given in every case in regard to financial and credit conditions existing in each country, and means of transportation. It has been active in endeavors to secure limitations on the list of contraband and greater freedom from annoying censorship of business cable messages. It is constantly engaged in placing its members in touch with buyers from foreign nations, including belligerents.

This has, of course, led to most careful consideration of the cotton question in all its phases. In the last half of October the Board of Directors of the Chamber made a trip throughout the South, visiting twenty-two cities and getting the point of view of the most active business men in each place visited. Everywhere the talk was of cotton, and the Directors were thus enabled to get a peculiarly comprehensive and valuable view of the situation as it then existed. More than anything else, they were impressed by the fact that the hysteria and crisis of which they had read so much in Northern papers either had never existed in fact, or had entirely passed away by the time the trip was made so that everywhere, although the seriousness of the problem was recognized, there was evidence of a strong feeling of confidence and ability to solve the situation. Since that time the condition has greatly improved through the opening up of the export of cotton in large quantities, the declaration, first by England, later assented to by France, that cotton would not be considered contraband; and the establishment of the so-called "Cotton Pool." How far this last is going to be actually utilized is still a problem but its establishment has undoubtedly contributed to the feeling of confidence and stability and its non-use would be evidence of the adequacy of other and regularly established methods of financing.

The "Buy-a-Bale" movement has passed with recognition of the patriotic and charitable rather than economic motives which gave rise to it and apparently in like manner, the movement to have the government go into the cotton business and purchase the surplus crop has subsided.

A large part of the work of the officials of the Chamber with Departments and Legations relative to facilitating foreign shipments deals with the shipment of cotton. Cotton has been and must, as far as I can see, always be a product which will peculiarly command the consideration and attention of the national business organization—the Chamber of Commerce of the United States of America.

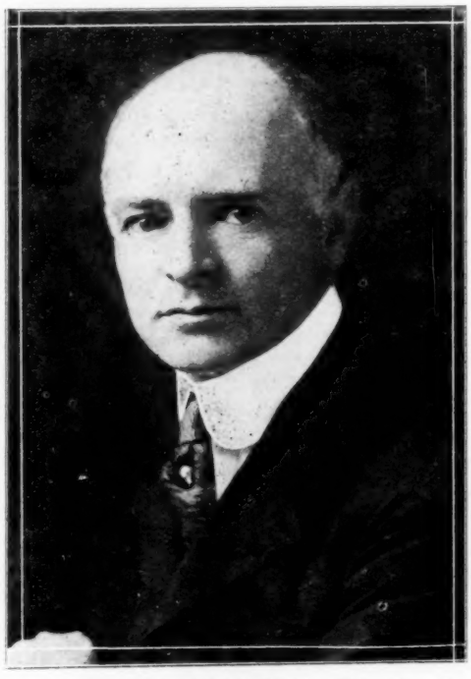
An American consular officer in Mexico reports that a firm in his district desires to form commercial relations with American manufacturers of thread. The firm explains that it formerly had a contract with a foreign company for 3,000 dozen spools per month. The firm states that it purchases for cash. An American reference is given. For information apply to Bureau of Foreign and Domestic Commerce and refer to file No. 14949.

The Influence of the Railroads on the Southern Cotton Manufacturing Industry

BY FAIRFAX HARRISON.*

The cotton manufacturing industry of the South has a great economic advantage over the industry in all other parts of the world in its location in proximity to the source of supply of the raw material. Other advantages are found in the hydro-electric power developments and abundant coal supply of the South and in the demonstrated possibility of developing from the native population, intelligent and skillful cotton mill operatives.

Great as these advantages are, however, railroad transportation has been essential to the development of cotton manufacturing in the southern states. While many of the mills are located practically in the midst of cotton fields, and are thus able to buy some of their raw material directly from the producers, I believe that I am safe in saying, that there is not a cotton mill in the South that does not get a large part of its cotton supply by rail. The mills that do not use hydro-electric power must get their coal by rail and substantially all cotton mill products must be shipped to market by rail.



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FAIRFAX HARRISON.

Prior to the development of the southern cotton manufacturing industry, the railroads of the South were assured of long hauls on cotton moving to the ports for export or to the cotton manufacturing centers in other parts of the United States, and I have been told that there were railroad men in the South who deplored the development of the industry for the reason that it would deprive their roads of the long haul on cotton. Speaking for Southern Railway Company, I may say that its management, never for a moment, entertained this short-sighted view, but that, from the organization of the company down to the present time, its uniform policy has been to encourage the development of the southern cotton mill industry in every reasonable and practicable way and to endeavor to secure the location of cotton mills at points along the Southern Railway System. That this has been a wise policy is attested by the large number of cities, towns, and mill villages along the Southern Railway which owe their prosperity, and in many cases their existence, to the cotton manufacturing industry.

When Southern manufacturers entered the selling field, they found the markets occupied by the products of New England and of foreign countries. The products of these older mills had established reputations and those of the southern mills were unknown and could be disposed of only if they could be put on the market on favorable terms. If this was to be done, the cooperation of the railroads was essential and the railroads of the South met the emergency. By themselves, and through their relations with connecting lines, freight rates were established that put southern made cotton goods in the markets of the United States and at the ports for export on terms which enabled them to compete with the products of the New England mills, and also many imported goods.

As I have already indicated the railroads of the South have been essential to the development of the cotton mill industry in the transportation of coal to the mills. Again speaking specifically for the Southern Railway Company; it is not a coal carrying railroad, in the sense in which that term is applied to those railroads the principle function of which is the carriage to market of the coal produced on their lines. It has ever been the ideal of the management that it should serve the individual South and, consistent with this ideal, its policy in the matter of developing facilities in coal producing territory has been primarily influenced by the consideration that an adequate and regular supply of coal was necessary to the industrial development of the South.

Thus we see that the railroads of the South have been among the most important factors in the progress of the cotton manufacturing and other industries.

That conditions in the South, generally—including the facilities provided by the railroads and the charges made for transportation—have been most favorable to the cotton mill industry, is demonstrated by United States Census figures. In 1880 there were 561,360 active spindles in the cotton producing states and they used in that year only 188,748 bales of cotton as compared with 1,381,596 bales consumed in other states. In the year ended August 31, 1914, there were 12,711,303 active spindles in the cotton producing states and they consumed in that year 3,023,415 bales of cotton which was 162,097 bales more than was consumed by the mills of all the other states combined, and was 722,374 bales more than the consumption of the New England mills. In other words, since 1880, the number of active spindles in the cotton mills of the South has increased 2,164.38 per cent, as compared with an increase of but 92.19 per cent in all of the other states, and the consumption of cotton has increased

*President Southern Railway Company.

1,501.82 per cent, as compared with an increase of but 107.12 per cent in all of the other states. In 1880 southern mill consumption was equal to 3.28 per cent of the crop of 5,755,359 bales made in 1879, and in the year ended August 31, 1914, it was equal to 20.70 per cent of the crop of 14,613,964 bales grown in 1913. That the industry is still growing faster in the South than in other parts of the United States is shown by an increase of 484,077 spindles in Southern mills in the year ended August 31, 1914, as compared with an increase of 103,729 in all other states and an increased consumption in southern mills of 62,897 bales, as compared with 35,506 in all other states.

The Traffic Department and its Uses

BY CAPT. H. P. MEIKLEHAM.*

The industrial and commercial traffic manager is just as necessary and important to the manufacturer and shipper, in proportion, as the traffic manager is to a transportation line, who sells his transportation and makes his own prices or rates, and in many instances arbitrarily and regardless of conditions. The manufacturer, shipper, and others are in a way helpless, as they individually know little or nothing about rates, classification or transportation matters.

Under the present amended Interstate Commerce Law, the shipper himself, is responsible for the freight rate he uses. He must know what the legal rates are; he cannot depend on the rates quoted him by the carriers representative. It matters not what rate the carriers agent may quote, or insert in the bill of lading, only the rates as published in the tariffs and filed with the Commission are the lawful rates, and the ones to be finally protected, thus placing the responsibilitiy on the shipper.

How many shippers or manufacturers know anything of rates, classification, etc., or can quote the correct rate on their own goods if they had a tariff? How many sell their goods delivered or make delivered prices against some competitor, when to do this it is necessary for them to know the correct freight rate or cost of delivering the goods to the prospective customer? It is also very important to know how to route the goods, not only to secure the best service, but also the lowest freight rate, as the route often controls the rate, and *vice versa*. How many shippers and manufacturers are familiar with these conditions?

The shipper, or manufacturer may make a sale or secure a contract based on certain rates quoted him by the carrier's representative, which are less than the published tariff rate, but these rates will not and cannot be protected unless correct as per the published tariffs, hence, they may cause considerable loss and inconvenience to the shipper who sells or buys the goods delivered, based on an erroneous rate quoted him by the carrier's agent. It frequently happens that different and conflicting rates are quoted on the same article by different railroad representatives at the same station. Many of these agents are inexperienced in rate matters and do not always have the proper tariff or facilities for giving correct information to shippers. As an illustration I quote from the experience of a large shipper who requested rates from several different railroads, on a certain commodity in carloads, as follows:

"Please quote me rate on —— carloads, Charleston, S. C. to Little Rock, Ark." He received the following replies:

(a) "Beg to quote rate at 43 cents per 100 pounds on —— carloads, Charleston, S. C. to Little Rock, Ark, minimum 36,000 pounds, as per Leland's S. W. Lines Tariff, ICC 961."

(b) "Rate on —— Charleston, S. C. to Little Rock, Ark., 30 cents carload minimum 40,000 pounds."

(c) "Rate on —— Charleston, S. C. to Little Rock, Ark., 31 cents per 100 pounds, carload minimum 40,000 pounds."

(d) "Rate on —— carloads, minimum 38,000 pounds, Charleston, S. C. to Little Rock, Ark., 20 cents per 100 pounds, as per Leland's ICC 961."

(e) "Rate on —— carloads, minimum 40,000 lbs., Charleston, S. C., to Little Rock, Ark., 26 cents per 100 pounds, applies via Memphis."

(f) "Rate on —— carloads, Charleston, S. C. to Little Rock, Ark., 26 cents per 100 pounds."

(g) "Rate on —— carloads, minimum 38,000 pounds, Charleston, S. C. to Little Rock, Ark., 20 cents per 100 pounds, as per Leland's ICC 961."

(h) "Rate on —— carloads, minimum 40,000 pounds, Charleston, S. C. to Little Rock, Ark., 39 cents per 100 pounds, applies via Memphis."

Quotations (a) and (b) are from the same railroad but different offices. Quotations (e) and (f) are also from different offices of the same railroad. Please note that these rates are quoted in Leland's Tariff by different representatives of railroads. The correct rate on the commodity, was 20 cents per 100 pounds.

The illustration given shows plainly what different constructions may be placed on some of the tariffs by the representatives of different carriers.

The railroad tariffs are not compiled and published so that an ordinary business man or shipper can understand them. Just as well expect him to interpret or understand the law which governs a particular case, without the assistance and advice of a lawyer, as to be able to pick up a freight tariff, and the proper tariff, too, and quote the correct rate on his shipment.

It is estimated that there are more than 15,000 different kinds of goods shipped, and more than 1,000,000 rates published in the tariffs of the transportation lines, which makes it necessary for the carriers to classify these various articles into groups, and apply different rates, according to the class, etc., between the different points. These rates and classifications being changed frequently, according to conditions arising, such as competitive markets, competition of carriers, and many similar propositions.

*Agent for the Massachusetts Mills in Georgia and Chairman of the Traffic Committee of the Georgia Cotton Manufacturers Association.

This Picture Has a Moral. In Which Class is Your Mill?

In addition to these numerous rates and classifications, there are a great many rules and regulations issued by the carriers relating to the transportation of freight. There are also many rulings and orders issued by the Interstate Commerce Commission and the different State Commissions, all of which must be observed, understood, and complied with carefully.

This rate and transportation question is much more complex today than it was ten years ago, or even five years ago, and the necessity for having some competent traffic man to look after all transportation matters is greater today than ever before.

Most of the large shippers and manufacturers realized this fact sometime ago and employed a traffic man to look after their interests. Many of the merchants and shippers of the large cities have organized Freight Bureaus and employ special traffic men to take charge of them. The expense of keeping up this Traffic Bureau is prorated among the members. This arrangement enables the smallest as well as the largest shipper to obtain the services of a high class traffic man to look after his interests at a nominal cost.

In these days when new adjustments are being made in rates and classifications all over the country, having the effect of changing commercial conditions, which have existed for years, the services of an experienced traffic man are invaluable to any large concern or to an association of manufacturers, as is proved by the number of such associations being formed, and the appointment of experienced and competent railroad men to take charge of their Traffic Departments.

The Industrial Traffic Manager must be competent to handle all the abstruse questions which frequently arise in connection with transportation, affecting the interests of his industry. He should be familiar with railroad methods, keep informed of changes in rates, classification, rules and regulations, affecting his own commodities. He should also keep in touch and be on friendly terms with traffic officials of transportation lines and thus be in a position to explain to them the necessary "why" when making requests for changes in rates or classifications such as may be needed and fair to his industry.

Most of the industrial traffic managers were former railroad officials or employees, and are, therefore, familiar with the methods of rate and classification adjustment, also the various rules and regulations of transportation, and such men can often prevent or keep down friction and trouble between the people they represent and the carriers, which in many cases arises through ignorance and improper handling of these matters.

In the matter of claims for overcharges, loss, damage, etc., how many shippers really know whether the proper rate has been assessed on their shipments, or whether they have been overcharged; unless the freight bills have been checked and the rates and calculations tested by a competent rate man, who is provided with the current tariffs, classification, etc., necessary to do this work? How many shippers know how to go about filing a claim or the methods necessary to obtain prompt settlement of claims for loss, damage and delay?

The value of the industrial traffic manager must not be measured by the actual cash which he turns in to the treasurer, although he oftentimes more than makes his salary in the proper handling of claims for overcharges, loss, damage, etc. But he saves many times his salary indirectly in many ways in looking after rate adjustments, quoting correct and lawful rates, routing of shipments, etc., and the efficiency of his position can be much added to by the intelligent and substantial cooperation of the executive officers of the industries. An industry which has its traffic manager, or a cotton mill, a member of an association which has a traffic department, should leave all matters of traffic and transportation to their traffic manager. Have him quote rates, check freight bills, look after claims for overcharge, loss, damage, etc., and route shipments of goods, both inbound and out. Where they think that rates need adjusting, they should call his attention to these matters, so that he can promptly look into them. In fact, they should give him full support and cooperation so that the traffic department can best serve their interests. Doing this way will save some freight money as well as much trouble, and inconvenience that would otherwise be incurred by an individual mill attempting to look after its freight matters without conferring with the traffic department.

There are many business men, shippers and manufacturers who do not give this transportation proposition the proper attention and important consideration they should. The result is a loss to their business either directly or indirectly, as transportation enters largely into the cost of their goods. In fact a large percentage of the cost for manufacturing, delivery, etc., is often covered by transportation.

To mention a concrete case, some of the cotton mills of Georgia formed an association, known as the "Cotton Manufacturers Association of Georgia," to which they have added a Traffic Department, with a competent and experienced railroad man in charge, who is not only familiar with rates, classification, state and interstate rules and regulations, but also in the handling of claims, proper routing of shipments, and transportation matters generally. Our Traffic Department has been able to save the mills of our Association many dollars in freight money in the way of adjustment of rates, classification, collection of claims, proper routing and handling of our goods, etc. This service has been given the mills of our Association at a very nominal cost, on a basis of so much per bale of cotton used. In fact the cost of our Traffic Department to the mills of our Association has been so low and of such great benefit, that no mill in Georgia, however small, can consistently afford not to be a member and help maintain this Traffic Department. However, I regret to say that there are many mills in Georgia that are not members and who do not contribute one cent towards our Traffic Department, although they indirectly derive much benefit from it in the way of adjustment of rates, classification, etc., and should take an interest in the organization, for our mutual benefit and protection. I hope they will yet realize the importance of doing so.

A Traffic Department is not only a good thing, but is an absolute necessity to any large shipper or manufacturer, and the cotton mill which has not a Traffic man in its employ, or it not a member of an association which has a competent Traffic Department, is simply neglecting its own interests and my advice is to "Get in the game" for self-protection.

French cotton textile industry (7,400,000 spindles) is chiefly located in Vosges districts around Lille, and, to a smaller extent, in Normandy.

Don't be afraid that your efforts will not be appreciated.

Conditions---Present and Prospective

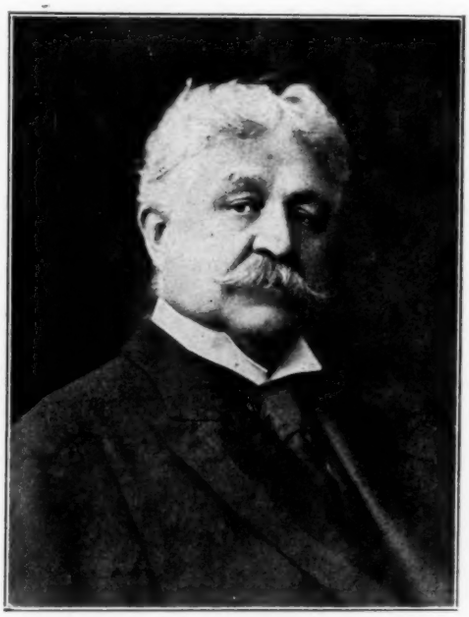
BY COL. ROBERT J. LOWRY*.

With the beginning of each New Year it is human nature to become in a measure more or less inspired with a new hope, and a bouyant expectation, which is measured to a great degree by individual temperament. In some vague way, not always capable of analysis, there is in every human breast an idea that somethnig good will happen to relieve the sombre experience and dull hue of the past.

"Hope springs eternal in the human breast;
Man never is, but always to be, blessed."

And so it is but natural that each and every one of us, who undertakes to scan the possibilities and probabilities of the ensuing twelve months, looks into the blackness of the vale with a certain sense of assurance that, notwithstanding a possible lack of reason for such a view, somehow he will succeed. It is probably the same sense of assurance, which a soldier feels, when he enlists for active service—that in some way he will escape death or serious injury.

I for one have little patience with the chronic pessimist, who is only happy when he is miserable. I have less patience with one, who broods over troubles, which may never happen, and whose worst troubles, in fact, have been those which never happened. Such an one is a menace to the environment which surrounds him, for, no matter how propitious conditions may be, such a wet blanket can chill the hope and ingenuity of the most optimistic and resourceful. Our pity goes out to the pessimist, whose pessimism is due to a superabundance of caution, because we feel that his caution often retards action and progress, but with the unfortunate individual whose pessimism is born of cowardice and blindness to his surroundings, we have scant sympathy.



COL. ROBERT J. LOWRY.

Last July, like thunder from a clear sky, a single pistol shot set a continent aflame, and plunged the great nations of Europe into the most terrible war in history. This sudden rush to arms on the part of these great nations shocked the world. Under the roar of cannon every country on the globe felt the sudden quaking of earth, and everything was immediately brought to a standstill. Business became depressed; cotton was without a foreign market; banks had to call for emergency currency; government receipts fell off to such an extent as to necessitate a war tax; and all conditions seemed to forecast a general stagnation in business pending a settlement of the war and a cessation of hostilities in Europe. These conditions I think were brought about very largely by the sudden shock of this continental conflict, which came without warning, and naturally aroused a timidity in entering into future contractual relations, which caused a sudden halt.

However, the war has now been going on for six months, and in a measure we have grown accustomed to it. There is one thing that it has taught us, and that is that no people in this day can live apart, and absolutely independent of every other. Before this war began thousands of our people never dreamed of the measure of our dependence upon Europe for prosperity here. Although the balance of trade is always in our favor, it never occurred to many of our people that this meant the marketing of our products abroad. When we came up against the fact that we had a large crop of cotton coming on, for which there was no market in Europe, it forced us to realize that "no man can live unto himself," and that the commerce of the world had become absolutely mutually interdependent. We have now learned that lesson by actual experience, and it probably will be a blessing in disguise.

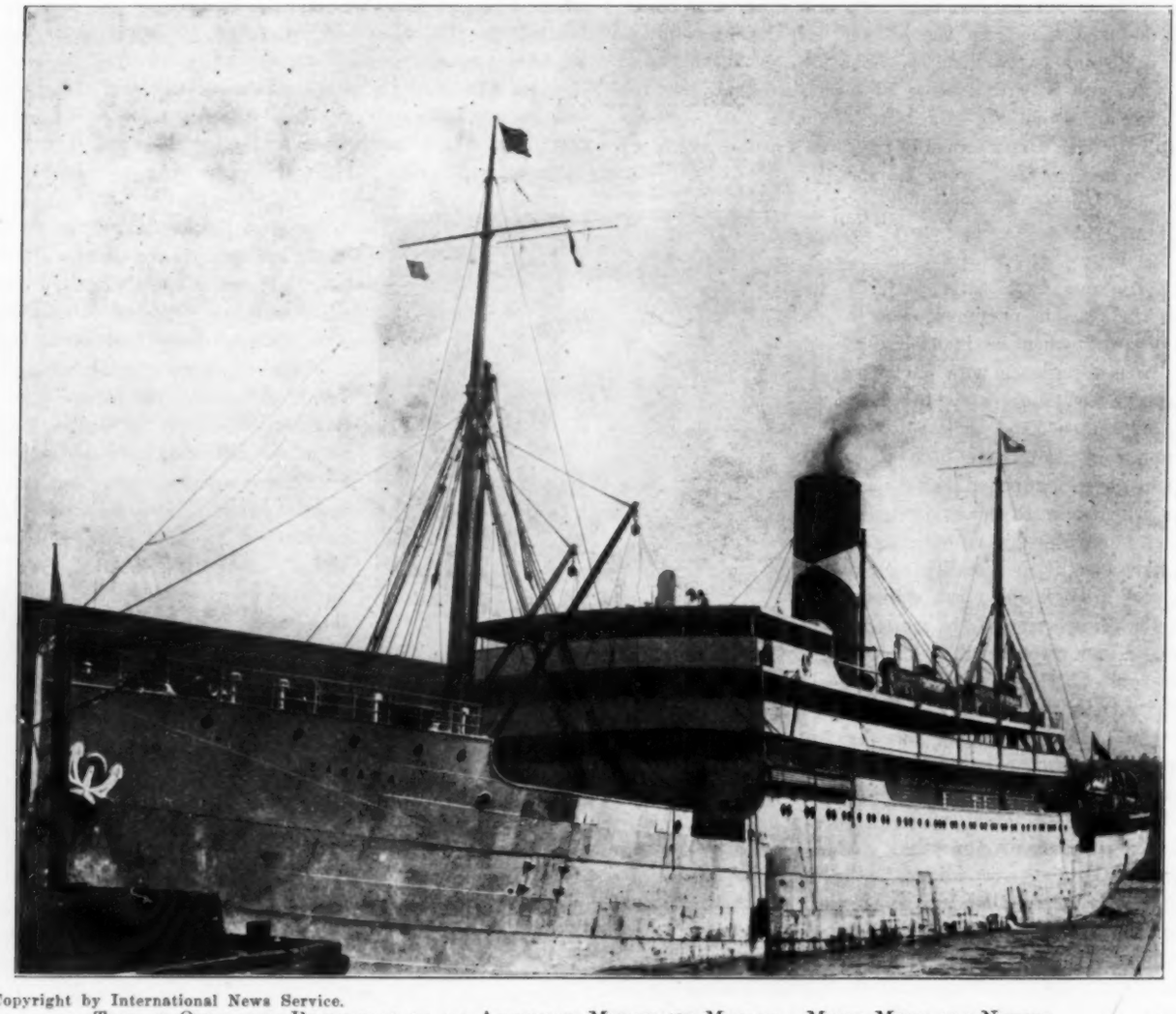
As I say, the war having been in progress for months, it has given us time to analyze the situation, and to calmly and dispassionately study our bearings. Distress cotton has practically all been taken off of the market, and, while commerce is still far from normal, the future is undoubtedly brighter. Of course none of us can tell what is in the future, but I see no reason why our commercial growth should be indefinitely checked by this great international war in Europe. Why? Because there are other markets for our goods; there are other outlets for our manufactured product, as well as raw product; and I think it is high time that we realized the fact that we have slept over a golden opportunity in the magnificent trade, which lies to the south of us, and which it is yet possible for us to cultivate with Latin America. Besides the possibilites in that direction, the opening of the Panama Canal puts us in line for a greatly increased Oriental trade, where the demand for cotton and cotton goods is steadily increasing. Japan's demand for raw cotton this year is greatly in excess of any amount she has heretofore taken of any one crop of cotton, and it has helped the situation wonderfully in this country.

It has been urged by some that, in view of the difficulties attendant upon acquiring the Latin-American trade, it is useless to attempt it, as the war in Europe will soon be over, and normal conditions will be restored. This cannot possibly be, for it will be years before the conditions of the mills in Europe can be called anything like normal. In the wake of the war follows want, lack of money, lack of skilled labor, rusty machinery, dismantled and destroyed mills, loss of credit, burdensome taxes, and a hundred other drawbacks, which will prevent the rehabilitation of European mills, and the resumption of normal demand. Meantime the southern planter goes on raising cotton, and

*President of the Lowry National Bank, Atlanta, Georgia.

the demand for a large portion of this crop, not consumed at home, must come from other markets than Europe. Further, the failure of the European mills to help supply the demand of the world, must necessarily throw a greater volume of business upon the American mills, and greatly increase the foreign demand for textile fabrics manufactured here. So, even if the war ended today, the establishment of other markets than Europe would be not only wise, but imperative.

Now, to acquire the Latin-American trade, it would be necessary to do several things, which have been done for this trade heretofore by other countries supplying their needs. First of all, we must be able to extend liberal credits to these people. They are relatively short of money, and it is absolutely necessary to give them favorable terms and time for payment. Second, we must make our commercial package to suit their needs, and prepare the fabrics and the packages so as to conform to their customs and the needs of their consuming public. Third, we must by all means foster and encourage in Latin-America confidence in, and friendliness for, American-made goods. We should do our best by these people rather upon the idea of the "Big-brother" movement in America. They should be given absolute value for every dollar of their money, that they spend with us, and there must be absolutely no trickery or sharp practice in dealing with these people, if we would build up a permanent trade worth while. The English and German spinners, who have gone into this territory, and practically monopolized this trade, have sought the business in the proper spirit of friendliness and encouragement of these people, and have labored to meet their exact needs commercially, and to extend such favorable terms of credit as to aid them financially. They have enjoyed this business, which geographically belongs to us, and which we should have acquired long since. It is our fault that we have in a large measure ignored the possibilities of foreign trade expansion in this direction, and now it seems to me that it is high time and an opportune time for the textile industry to avail itself of this outlet, and acquire this enormous trade, which lies to the south of us, indeed a most inviting field.



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THIS IS ONLY THE BEGINNING OF AN AMERICAN MERCHANT MARINE. MANY MORE ARE NEEDED.

The United Fruit Company's liner Zacapa, the first vessel to be registered under the American flag after the amendment to the shipping law was signed. Photographed at the foot of Fulton Street, New York, September 16th, 1914.

In order to properly develop this Latin-American trade, or in fact any foreign trade, it is absolutely imperative that this nation should have an adequate American merchant marine. It does seem to me that it is high time for the

Congress of these United States to practice more patriotism and less politics. Matters of such great moment as the building up of a strong American merchant marine should not be questions of partisan politics, for it is a great project affecting our commercial future, and the prosperity of the nation. There has been in the past too little of

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CHANGING HER NATIONALITY.

Scene on the after deck of the United Fruit Company's steamship Zacapa, when the British flag was hauled down and replaced by the "Stars and Stripes," signifying the Zacapa to be an American registered vessel.

cooperative constructive statesmanship, and the spirit of penurious retrenchment which has been in evidence has been short-sighted. What we save by a too conservative policy simply circumscribes our growth, and limits the scope of influence, which should be ours abroad commercially and politically.

It is an absolutely necessary and imperative part of our foreign commercial policy that we have transportation facilities of our own—*that we have American-made goods carried in American ships manned by American seamen!* Think of the billions of dollars, which American producers and manufacturers have paid to foreigners in ocean freights annually. It is appaling from the point of finance, and shameful from the viewpoint of national pride, that we rent foreign ships flying foreign flags to carry our products to foreign markets. By this short-sighted policy we insure the continued presence of foreign flags on the high seas, and the conspicuous absence of our own. If we expect to develop a Latin-American trade, or an Oriental trade, an American merchant marine is an absolute prerequisite, and it behooves those in authority to realize a national necessity, and quit quibbling over relatively small public expenses, and meet the issue as men and not as politicians.

I might call attention to what such a merchant marine would mean to this nation, in the event of war. Under subsidy by the government they would be dismantled as merchant boats, would be manned by soldier-sailors, equipped as fighting vessels, and would transport our troops to any part of the world, where their presence would be required either for war or for police protection. This would enable the government to carry on a successful campaign without begging, buying or borrowing aid from other powers. As it is today, we are practically helpless, and we must have a subsidized merchant marine, if we expect to maintain a commercial and political prestige worthy of the standing of our flag among the nations of the world.

Italy is steadily gaining ground on the Greek markets in her lines of flannelettes, zephyrs, prints, and plain "cabots." The ability of the Italian manufacturer to undersell the American is due, perhaps, in part to the comparative cheapness of Italian labor. It is due, however, in no small part, apparently, to the fact that the Italian manufacturer uses a somewhat inferior grade of cotton in his products. In the year 1910-11 Indian cotton was imported into Italy to the amount of $14,511,903, and in 1911-12 to the amount of $9,100,355 (according to the report of the Italian Government). In the year 1911-12 the United Kingdom took Indian cotton only to the amount of $5,864,132 (same authority). Italy is, next after Japan, India's best market for raw cotton.

The Indian cotton is of shorter staple than the American article and has less durability. It is also considerably cheaper. The Italian manufacturer apparently blends a certain amount of the short-staple Indian article with the American cotton, which he imports in great quantities, and is able to turn out at an attractive price a product which is apparently quite as good as the American product, but which is hardly equal to it in durability.

The American exporter of cotton goods must take these things into consideration when he enters the field in competition.

The Elsassisches Textil-Blatt, of June 16, 1914, gives a resume of the recent financial reports of 173 German stock companies engaged in various branches of the textile industries. These reports are for the fiscal year 1913-14. The total nominal capital of these 173 joint-stock companies was $81,512,000 in 1913-14, a small increase over the previous year when the capital of these companies was $79,320,000. The dividends paid by these companies increased from $7,192,000 in 1912-13 to $7,256,000 in 1914.

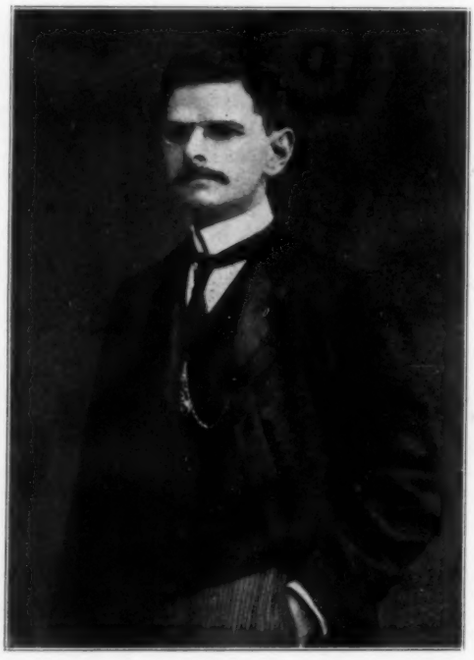
Improving Dyehouse Conditions

BY DR. LOUIS J. MATOS.

Progress in the dyeing art, as measured by the more or less technical improvements that are announced from time to time, and which take the form of abstracts of patents that have been granted to various inventors, and details of processes, naturally lead one to believe that the "discoveries" made mark epochs in general textile work. A general survey of the entire textile field will show, on the other hand, however, that much that is generally regarded as "progress" does not take shape in the form of patented inventions, but rather in readjustments of working conditions, and modifications of the present way of doing things.

To one whose business in part, is to keep on the lookout for needed improvements, and to discover wherever possible, a way of doing anything that can be improved, it is apparent that there exists a very wide field for investigation in many textile mills, the managements of which do not yet fully realize that greater economy is to be effected by a gradual abandonment of old and worn out methods of work, and at the same time to alter conditions and surroundings by improvements that conduce to a more contented frame of mind on the part of the work people. The human element is still strong in mills. While we see and recognize the great advancements that have been made during the last twenty-five years in textile machinery, it remains a fact that, however human-like a machine is, its direction by the workman is still an important factor.

The present article deals more particularly with dyehouses, but what applies to this part of a mill may also apply to other departments with equal force.



DR. LOUIS J. MATOS.

Not so many years ago, when a mill was contemplating adding a dyehouse to its equipment, almost any place was considered sufficiently good for the purpose, and if the place happened to be wet and damp and practically unsuited for any other class of mill work, then that fact alone determined the location of the new dyehouse without further argument.

There are a number of dyehouses in operation today in apparently successfully conducted mills that are wholly unsuited for the purpose, and were it not for the skill and resourcefulness of the dyer in charge, no successful work could be done in them. I allude to both the equipment and surroundings. There are mill dyehouses in operation running on cotton as well as woolen goods, the appliances with which they are equipped being of an era when nothing but "wood dyes" were in vogue, and which are painfully out-of-date for the modern types of dyes, and the advanced dyeing methods of the present period.

It is absolutely true that modern dyehouse conditions have not kept pace with the advancements that have been made, and are now being made, by technical chemists. While more complicated dyes are constantly being devised and put on the market, calling for more exactly controlled dyeing operations, dyers in many mills are required to employ these new dyes and processes, adapting them to their antiquated equipment, with the inevitable result that the dyeings do not measure up to the standards fixed by the mill, or those assured by the dyestuff seller. To overcome this condition, among others, two very important things must be considered; to provide for the dyer a suitable place for him to make experiments and preliminary trials with new dyes and processes, and where he and his assistants can be free to work out their problems in dyeings, and give the best that is in them to the concern for which they work. The dyer should also be provided with a suitable place in which to keep his dyehouse records and formulae and where he can feel assured they will be reasonably safe.

It it a mistake to have a dyer's "office" and laboratory forming part of the "drug room." Newly planned dyehouses, even of small dimensions are so laid out that they comprise besides the dyehouse proper, the dyers' office or room, and also a room to keep the dyes and some chemicals that are stored in small packages, while larger packages and barrels are kept outside. In large dyehouses, a chemical and dye store-room is usually provided, and is a good investment.

In these days of increasing interest in cost finding, the relations between the dyer and the management are necessarily more intimate than formerly, and the feeling that existed in the mind of the dyer that the firm was endeavoring to get his "secrets" whenever it asked him for his dyeing figures, is now gradually passing. There was a time when dyers positively refused to divulge to the concern for which they worked, any data regarding the cost of dyeing and as a consequence, the "office" was compelled to resort to guesses in order to reach some sort of a figure that could serve as a basis for fixing prices.

In many mills, the old records will show that no accurate cost figures existed, that the monthly inventory alone served as the basis of costs, and no difference was made between light and heavy shades, or between easily made or complicated dyeings. In fact, it is to be doubted if many of the dyers in these mills were competent to calculate the costs, even if supplied with the prices of the several items.

A cause of mutual distrust that was largely responsible for the gulf existing between the dyer and the office, was the practice of suppressing all knowledge regarding prices of dyes, etc.; few dyers being permitted to have this information. In many such mills, the dyer, on the other hand, often believed that he was retaliating by removing the labels from his dyes and chemicals to obscure the identity of what he used, fearing that "the boss" had some workman in the dyehouse to secure this information. Happily, these conditions are now so few as to prove the exception, closer and more intimate relations now hold between the various departments of the mill.

The dyer of to-day, due to his better education, made necessary by continually increasing skill and intelligence demanded by modern competition and manufacturing conditions, has advanced from a somewhat isolated position to one of importance in the mill, and consequently is more frequently brought into the councils with the mill authorities, and conferences with the customers of his mill.

The present day dyer is secure in his position by virtue of his knowledge of his trade, knowledge that cannot be lost to him, should he lose his recipes, as in the days of old. He is today a colorist as well as a dyer, and as his value to the industry is more and more recognized, he will gradually develop as a chemist. Toward this end the textile schools are materially aiding, although a number of them fail to recognize that the work required of a dyer in a mill is not strictly chemical but at the same time they overload some of their students of dyeing with an amount of chemistry that they cannot possibly digest. These schools fail to realize that a chemically trained man may become a good dyer if he has good vision, the inclination and the ability to adapt himself to the surroundings of an average dyehouse and to the class of labor that is usually assigned to the dyehouse.

There is every reason why mills should employ the same class of men as dyers that the dyestuff houses do as technologists and demonstrators, a large majority of the latter being, in fact, men who were formerly dyers but who have given up their positions in mills on account of the backward conditions under which they worked, and which they could not remedy.

The present war in Europe affords an excellent opportunity for American mill owners to investigate the conditions that obtain in their dyehouses with a view to their improvement, or to erect at once new dyehouses. The idea that a dyehouse is correctly located when it is practically water soaked on a rainy day, or so foggy on a cold day that the workmen cannot see the pieces over the winches or on the jigs, is wrong. A dyehouse having these conditions is not fit for men to work in; the health of a workman should be given full consideration.

Floors, roofs, unpainted water, and uninsulated steam pipes should be given attention. Wooden floors are at best an abomination, and are a poor investment. The common practice of allowing spent dye-liquors to flow over the dyehouse floor instead of through a proper connection into a drain, does not add to either the convenience or the amiability of the employees.

Poor light is now being recognized as the most fruitful source of dyehouse setbacks. The ideal dyehouse should have an ample flood of direct light from windows or overhead lights so situated that the dyers can observe the progress of the pieces or skeins during dyeing, and not be so crowded that light from one window is distributed over two or three kettles.

Since the introduction of compact pressure dyeing machines, the work turned out by them is expected to be much more perfect than by the older methods of dyeing, but here again the fact is brought prominently before us that dyestuffs and the chemical principles involved are somewhat in advance of the means for applying them, particularly as relates to the vat colors on cotton. It is analogous to the conflict between the armor plate maker and the gun maker, each must keep up with the other's progress. In the case of beam warp-dyeing machines, the ideal of perfection has not yet been reached, especially where the application of the vat colors is concerned, but it is believed, in view of recently made improvements, that the engineers and machine builders are beginning to see wherein the earlier types of apparatus could be improved.

On the other hand, the chemical side of vat dyeing is not thoroughly understood, those engaged in the development of the dyes have been too busy devising dyeing methods to meet individual and particular needs, and in consequence the fine points of vat color dyeing, especially as relates to warps, have not yet been touched upon. This is a fruitful field for practical dyers to take up and investigate, particularly in mills having beam warp machines.

Not long ago, in discussing partial modern equipment of a dyehouse with a dyer of many years' experience, the conversation gradually drifted in the direction of his firms' sentiment in matters regarding the improvement of the dyehouse, by bringing it gradually up-to-date, and as the older machines gave out, by the addition of new and improved types of machines known to be best suited for the class of work they were doing. My dyer friend dismissed the thought by observing that those in charge would take no suggestions from him, but that they would expect him to continue to get off his work with the old machines. I could not agree with him entirely, and waited for the opportunity to present itself so that the proposition of replacing obsolete types of machines with modern ones could be talked over with the firm, in order that their dyehouse could keep in the front in quality and kind of output. In time the opening came, and to my surprise the management stated that they were anxious to improve the dyehouse, if only the dyer would commit himself as to what improvements were necessary. They feared that he was not sufficiently well posted as to what was on the market necessary for their work, and consequently matters were at a stand. On the other hand, the firm admitted that the dyer was competent to turn out his work with what equipment he had and that any suggestions from outside that might be put into execution would only lead to possible jealousies and unpleasantness and this they wished to avoid. Such conditions are not unusual and without doubt there are others who could cite similar experiences.

If a dyer knows the details of his trade, he will have no difficulty in getting from the firm for whom he works, that which he knows is necessary to have in order to meet the requirements of his mill and its customers.

Every suggestion, when given careful consideration and which is finally adopted, is a distinct step towards greater mill efficiency, whether it is a new dyestuff that yields better results, or a machine that saves time without additional wear and tear of the goods, the advantage is the same. The introduction of rotary yarn dyeing machines was one of

those revolutionary ideas that caused old time dyers to stand aghast, but there is to-day, hardly a mill dyehouse running on yarns, but has one or more of these appliances.

A measure of effective dyehouse work is the small number of pieces of cloth or batches of yarn that are returned as being off shade and requiring redyeing, and nothing will aid in keeping the redyes to a low point more than a system of bonus. Another system that should receive closer attention than it does is the granting of premiums on matches made with the fewest number of swatches or samples taken, based upon an arbitrary minimum number agreed to. Of course there are exceptions, especially when building up a shade to match a new sample, but on the run of work, after the formula is fixed, it is always an advantage to get the pieces out of the dyehouse, and of the correct shade, and the chief source of delays consists in determining just what to do between cutting swatches. Any system that carries with it provisions for rewards for better work and the prevention of losses of either time or material, is sure to work out advantageously to both the mill adopting it and the work people affected by it, if it is conscientiously lived up to.

A source of trouble in some textile mills is due to the overworking of some of the departments to catch up with others. This is noticed at times when the dyehouse is ahead of, and crowding the finishing room, the latter in consequence feels compelled to push matters with the inevitable result that pieces are not given the same amount of attention they would receive if the work was not hurried. When such instances are frequent, they show that the finishing department is undersized and incapable of handling properly the goods delivered to it.

The various subjects herein touched upon have been suggested after practical contact with mill conditions covering every phase of dyehouse work, and it is to be noted that both dyers and textile manufacturers are taking more interest in opportunities for bettering their facilities for manufacturing, which carries with it suggestions for improving the conditions under which the "hands" themselves labor.

Reasons Why Some Salesmen Do Not Sell

BY G. G. SLAUGHTER*.

The art of selling either a raw product or a finished article may be classified under two general heads; first, the quality of the material or article to be sold; and second, the degree of perfection which the salesman has attained in his study of human nature. The first will seldom make a sale without the aid of the second, particularly if it is being sold in competition with goods of a like merit. This general statement may be modified by several qualifying clauses, but in the final summing up it will be found that a great deal of a salesman's success depends on his "approach" and the "presentation" he gives to his goods.

While I was asked to outline a few of the reasons why some salesmen no *not* sell, I find, on consideration, that I can perhaps make my meaning more evident to the reader if I write something on both sides of the subject and tell why some men make good while others fail. Probably I feel this way because the majority of salesmen who call on me are good salesmen and the methods which they use impress themselves upon me more forcibly than do the occasional vain struggles of the other type which are very soon forgotten.

First and foremost a salesman should be thoroughly familiar with his own line. He should know it through and through including price, terms, cash discount and when deliveries can be made. Sometimes a salesman loses an order because he cannot quote on a large order promptly; and again he loses an order because he fails to quote the cash discount and freight allowance; or perhaps he quotes the same price, with the same cash discount as his competitor, both quoting f.o.b. their shipping point, but one salesman has a cheaper freight rate than the other, though he fails to profit by his cheaper freight rate unless he knows about it and calls it to the attention of the buyer. In these days of keen competition, all these things count. A salesman who does not know his line thoroughly cannot inspire the confidence that is probably due his goods and when he shows, even in minor details, that he is not thoroughly familiar with his line, the buyer in a way, loses confidence in him.

Most salesmen are also familiar with their competitors' lines, though when a good salesman makes comparisons he does not knock the other fellow's goods. He generally speaks well of a competitor and his line, and depends upon his personal selling ability to show the buyer in a convincing way the superiority of his own goods. A wise salesman knows that a knocker generally creates sympathy for the absent competitor.

Nearly all buyers feel that they would like to give every salesman that calls an order, I mean to say this is the normal attitude of the average buyer's mind; this is his personal feeling and when he does not give an order, he has a reason for his action. Some of these reasons are, no doubt, imaginary and others are real. For instance the buyer may believe (wrongly) that the firm represented by the salesman does not make strictly high grade material, or that the firm is not responsible, or that the goods offered are not suitable for his special work. When a salesman fails to show that his goods are high class, that his house is reliable and that his goods are suited in every way for the purpose, he loses orders where a convincing argument wins. In other words, if there is no real ground for doubt, the salesman should leave no stone unturned to convince the buyer that he runs no risk in substituting the new line, for where doubt does exist the buyer generally plays safe.

Some few salesmen are not considerate about consuming a buyer's time. Such a man, after shaking hands, usually starts out to discuss social matters, passes through the war and the political situations in detail and winds up on the latest tango step, in fact discusses every subject under the

*Purchasing agent for thirty-three mills, with office and laboratory at Greenville, S. C.

sun except business. These subjects are very nice in their place, though the most interesting subject in a business office is business. I believe most buyers are ready and anxious to talk business the instant the salesman puts in his appearance and are disappointed when so many other subjects are brought into the conversation. Interviewing salesmen is both interesting and instructive and I attach a great deal of importance to personal talks with salesmen. They are usually experts in their lines and a great deal of information can be had from them when they are treated right, and a buyer who attaches no special importance to the personal contact with salesmen loses more than he imagines.

A good salesman is a close observer and studies human nature in all its phases. He approaches each buyer as he finds him, using different tactics on the different men. Some buyers are naturally skeptical and salesmen have to reason with them slowly, going over every point in detail before they are convinced. Others are open minded, think rapidly and to these the talking over of unimportant details is time wasted. The good salesman has learned to differentiate between these two types of buyers and gives to each the treatment best suited to his temperament. Some salesmen talk a great deal and say nothing. They seem to have the faculty of talking all around a subject, but never go directly to it. This confuses the buyer and clogs his brain with mere words and causes him to forget the points the salesman is trying to emphasize. The fewer words used in expressing the full meaning, the more convincing the argument is to the listener.

Many salesmen have talked themselves out of an order in various ways. Some are pessimistic and no matter how prosperous a buyer may be feeling, a salesman with a large dose of pessimism in his system can usually prove conclusively in a ten minute talk that times are so hard and business prospects so poor, that it would be the utmost folly for him to buy anything unless absolutely necessary for immediate use. Others are natural born kickers, always have a grouch and make every one with whom they come in contact feel sore. These people change the atmosphere wherever they go, casting out depressing clouds of gloom and pessimism. Such men always get what they give out. Their outlook on the world is a reflection of their own gloomy faces as if seen in a mirror and the result of such visits are always disappointing and unsatisfactory.

A salesman sometimes loses an order because he is not a cheerful loser. He makes himself so disagreeable when he loses in competition with others, that he not only loses the present order but also loses the opportunity to try for the next one.

When entering a buyer's office a salesman should introduce himself, his house and his line immediately, if he is not sure the buyer remembers him. Many times the buyer will recognize a man as someone who has called before, but out of the great number of such men with whom he comes in contact it is utterly impossible to always recall the name of the man, the company he represents, or the line he sells, and it is well to remember that the average buyer is a busy man and has neither the time nor inclination to start a guessing contest.

It is a bad policy for a salesman to speak disrespectively of one buyer to another, as the man to whom he is talking no doubt thinks he will be spoken of in the same way when the salesman is visiting the other fellow.

Some salesmen who have been selling the same line for a long time do not deem it necessary to talk their wares to the buyer, taking it for granted that their line is an old established line, already introduced and needs no talking. This may be true in some cases, though a few well chosen words concerning improvements, new uses, new customers, etc., are necessary to keep the buyer from getting too much interested in the competitive lines which are being continuously brought to his attention.

When a salesman succeeds in taking an order he should create the impression that he is glad to get it. Some people seem to take orders in such a way as to make the buyer believe they are doing him a great favor and, so far as they are concerned, the order means nothing to them. When I meet a man like this I am always sorry I did not give the order to the other fellow, as he appeared anxious to get it.

Above all things a salesman should be truthful, for when he has gained the confidence and respect of his customers he has built up a permanent business that no one can take away from him.

Enthusiasm is another important factor in salesmanship and many orders are lost because the salesman did not appear to be enthusiastic over his own line. I do not mean he should be over-enthusiastic but that he should be full of the genuine article that is born of confidence.

The lack of a sufficient guarantee loses some orders. When a salesman is introducing a line into a new territory and is unwilling to guarantee his goods to give absolute satisfaction before they are paid for, it seems to the buyer that he has not the confidence in his line that the buyer expects him to have and he should not expect anything except to be turned down. When the buyer feels that he is the one who is expected to take a chance he usually takes his chance by sticking to the line he is using.

Carrying around real good samples and shipping goods that do not quite measure up to the samples is also a bad policy and will destroy the confidence of the buyer. A representative sample should always be shown. The goods that are sold and which will bring other orders are the goods which show up well on arrival and that continue to give satisfaction when put into use. I wish to lend emphasis to this point as it is often the firms behind the salesmen who are responsible for such practice.

I am glad to say that the majority of the salesmen today are high class men, they are clean cut, they read good literature and continually strive to improve over their work of yesterday. They know their business and it is a real pleasure to have them call. They are successful because they have tried to be. Their interests and those of the buyer are mutual. They are his friends, for they bring the markets of the world to his door.

The 1913 cotton crop in Lagos was eminently satisfactory. The largest crop previously raised in Lagos, namely, in 1909, amounted to 12,100 bales.

An orderly exit of employees at noon and end of the day is important especially when it is necessary to descend staircases.

Electricity and the Mill's Human Problem

BY CHERRY LOGAN EMERSON.

Among the comparatively few high salaried men of the United States is William M. Wood, President of the American Woolen Company, who from his sky scraper office in Boston shapes the policies of the forty odd mills under his control and incidentally the prices of the woolen goods market of the country. No matter how great Mr. Wood's knowledge of the intricacies of the woolen business may be, it is not that knowledge which justifies his directors in paying him one hundred thousand dollars a year but rather his ability to control and direct the efforts of the men under his supervision, who handle the details of manufacturing.

In the same manner, the management of our southern cotton mills have grown every year to be more and more of a human problem and less a mechanical one. The vital question confronting the superintendent is how to get more skilled help and as the number and size of the mills increase, this problem will become more and more difficult of solution. It has been said that when a mill family wish to leave their existing employment for seemingly greener fields, all they have to do is to put out the fire and call the dog. With people who have no stronger ties, moulding a firm organization is as difficult as the task of gathering up a handful of quicksilver. As a result, the far-sighted manager is always on the alert for new aids to the solution of the help problem.

Realizing the paramount interest of this question, I believe that it will not come amiss to consider the influences that electricity and the electric motor drive in particular can exert in this direction. It is true that its bearing on the matter of help is the lesser part of the interest which electric drive has for the mill man. He first embraces it for its overshadowing advantage of increased production and improved product, which advantage can be directly translated into larger dividends, but this phase of the question has been viewed from so many angles that most of us are familiar with its aspects. On the other hand there seems, at first glance, to be little connection between the contentment of the worker in his cottage and the mysterious force which turns the spindles in the mill. Let us, however, consider the subject and see if the gap really exists and whether electric drive does not, in its own way, assist in bringing about this feeling of content.

Years ago when mills were few, practically all of them were located on the banks of some stream where the water power could be transferred, by the wheel, to the line shaft. When Corliss' improvements on the reciprocating engine brought steam to the fore, the mills could be built a little distance from the water supply but it was still necessary to maintain a reasonable proximity in order to obtain, cheaply, the necessary water supply for the boilers and condensers. Nowadays the mills are found on the hill tops—placed without regard to water supply—while energy is brought over copper wires supported on towers of steel. This progress has finally placed the mill and its attendant village where sunshine and air can do nature's part in keeping the mill people healthy. Since we know that good health constitutes the first essential of good work in any field, we must agree that electric power, by virtue of its ease of transmission, has done something toward providing higher working efficiency.

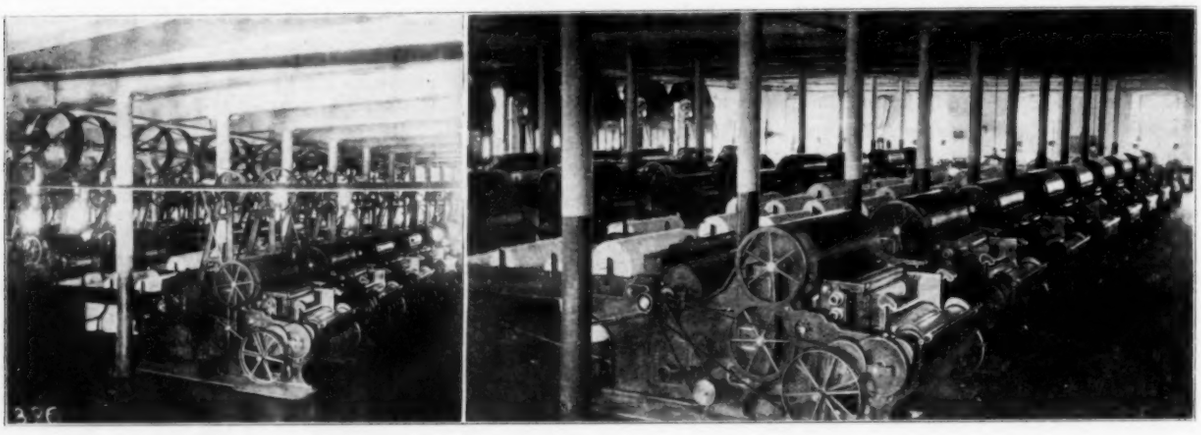


FIG. 1. A PICKER ROOM SHOWING BELT DRIVE.

FIG. 2. THE SAME ROOM WITH INDIVIDUAL MOTORS.

Electricity has so completely displaced kerosene in the artificial illumination of mills and villages that its benefits are accepted as a matter of course; strictly speaking, therefore, these features do not enter into the scope of our discussion, the benefits derived, however, must be rightly attributed to electricity. Moreover, it is to be noted that progress is being made every day in increasing these benefits by better illumination. The thousands of dollars spent in experiments by the manufacturing companies, have led first to the retirement of arc lamps in favor of incandescents and then the displacement of carbon incandescents by mazdas, while in the future we see the nitrogen filled lamp looming up as a possibility, although its manufacture is at present restricted to large units. Insurance statistics show that a larger percentage of accidents occur in the winter months when more artificial illumination is used, so that detailed study may well be given to the lighting question.

Darkness has always been a natural enemy of man and the semi-gloom of badly lighted rooms tends to make the workers careless and discontented where proper light would introduce alertness and good spirits. Even on the brightest days there are places in many of our mechanically driven mills where a maze of belting and shafting serve to cut off the light. The two accompanying photographs tell better than columns of description the effect that can be obtained by the introduction of motor drive. Figure 1 on the left shows a picker room driven in the old time way by counters, and Figure 2 on the right the same room after individual motors had been applied. A picker hand would undoubtedly be better satisfied to work under the new conditions and moreover could do more efficient work. That the value of light has long been recognized is indicated by the numerous weave sheds where the owners have been willing to accept the disadvantages of belts through the floor, driving from line shaft below in order to eliminate them from the weave room itself. Sight, the most precious of the five senses, is generally the first to fail before the advance of years. Hence to aid and protect the eye and retain the full measure af man's ability, the best of light is none too good. Besides, there is a certain influence brought about by good illumination just as in the case of good ventilation and proper temperature that makes a worker's services more profitable to himself and his employer.

Every belt that can be eliminated means, not only a gain in economy, but also a gain in the working conditions of the employees. This is particularly true on account of the presence of quantities of lint and fly in the air of all mills, especially in coarse-goods mills and particularly, in the processes of picking and carding. Observing a card being stripped out, we see the belts acting as fans to distribute the fly in every part of the room, so that all the carders get their share. Elsewhere in the mill the same thing is going on to a lesser degree; the agitation of the air making worse a necessarily bad condition. Motor drive would remove all or a great part of the belts, pulleys and shafts and prevent the continual stirring of the lint.

One of the most prominent mill managers of the Carolinas has one weave shed driven by individual motors, one to each loom, and another driven, in the old way, by belts and counters. He advised that the motor driven room stays about three degrees cooler than the other. Whether this is attributable to motor drive or some difference existing in the humidifying systems, it is difficult to say, but when we consider that power can never be lost but can merely change its form we realize that all the power in the friction of shaft, hangers, main belts, counter belts, machine belts and pulleys must go into heat. Since in mechanically driven mills from 15 to 33⅓ per cent is thus expended, it is apparent that much more heat must be liberated than with a motor drive where the losses may be between 7 and 12 per cent. Overheating results in dulling the senses, thus rendering the workers torpid and partially stupefied.

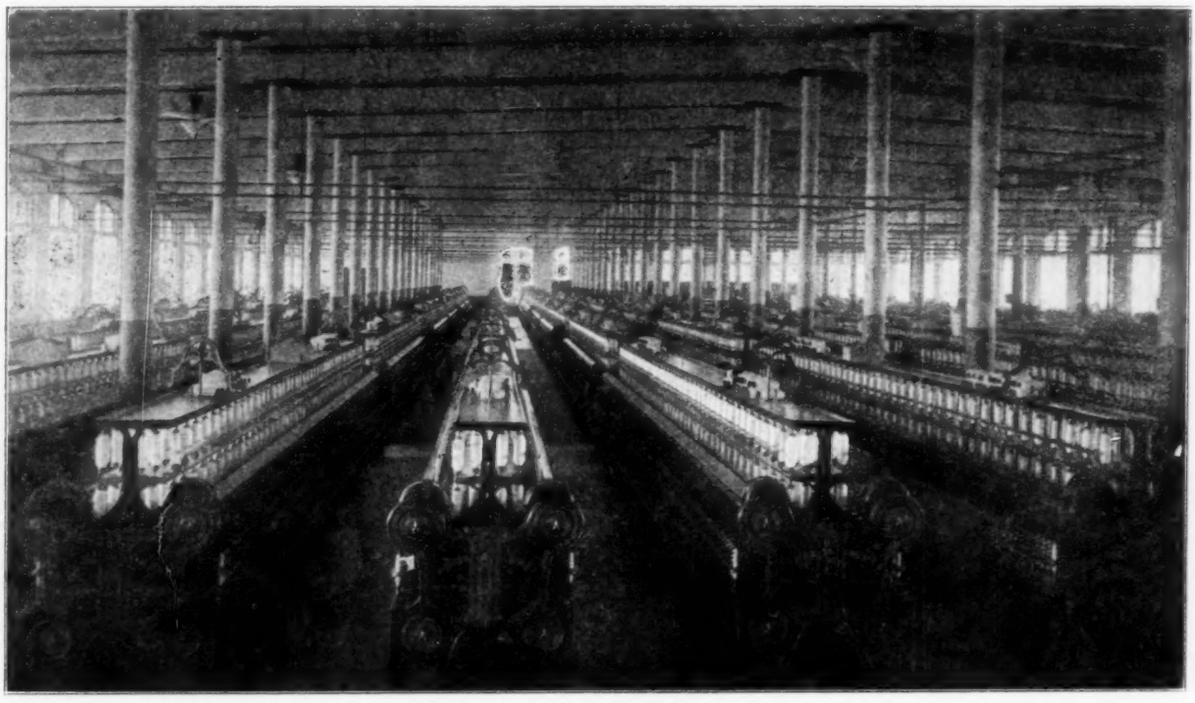


FIG. 3. SPINNING ROOM DRIVEN BY INDIVIDUAL MOTORS.

If a superintendent should be asked what was the greatest single factor in keeping his help contented, he would probably say, "Good running work," and that is where the electric drive makes its most insistent appeal. The application of motors, particularly when directly applied to the individual machines, gives an even and constant turning moment which is eminently desirable in working a delicate material like cotton. Beginning with the first process, picking, we find that connecting a motor direct to the beater shaft tends to give us cleaner laps, even with a reduced beater speed, for with a belt drive when a particularly matted bunch of cotton reaches the beater the belt slips and the cotton needing the most beating receives the least. The highly polished surface of the beater pulley attests to this fact. With a motor drive this speed is absolutely fixed and each inch of staple receives the same number of blows from the bars of the beater. The maintaining of a constant speed on the fans and calendar rolls also eliminates some of the causes of split laps. The importance of good

work in the picker room cannot be overestimated because it affects every succeeding process throughout the mill. Carding does not perhaps offer as many advantages as the other departments but since the sliver is most delicate while passing through these machines, it is reasonable to suppose that a more regular speed will be productive of good results.

The employment of many children in the spinning room makes this the most difficult place to control and an advantage gained at this point is doubly valuable. Doing away with the oscillations occasioned by belt drive results in keeping the front rolls turning all the time with the same speed and in keeping every spindle up to its work. In mills where individual motors have been attached to the frame and where the front roll speed, that previously existed, was maintained, the decrease in breakage of ends was most noticeable and in one of them "six side" spinners were given eight sides to look after. A large part of the second hand's time is devoted to the care and replacement of belts. He is the overseer's right hand and if he could be relieved of the work of belt carding and belt dressing and belt splicing, he would have more time to devote to the section men and spinners. The same fan action of belts referred to in connection with carding exists in the spinning room but with more serious results to the work. The spinners are not allowed to clean their frames with a flap because it would blow fly into the yarn and cause "gouts" but this is exactly what the belts are doing all day long at the pulley end of the frame. The accompanying photograph of a spinning room driven by individual motors gives an idea of what may be accomplished by getting rid of all belts and shafting.

Good weavers are not easy to get or to keep and a great deal of thought is spent in keeping this department up to the mark. One mill, to my knowledge, has a weave shed one half of which is driven by individual motors and the other half by counters and belts. The weavers on the motor driven looms uniformly got off more cuts than the others; in fact, the price per cut had to be slightly reduced on the electrically driven looms and still the weavers were anxious to have them. A loom, if motor driven at the same number of picks per minute will require less loom fixing that it did on a belt drive due to the more positive power. The case is analogous to that of an automobile driven over a smooth macadam pike and a rough country road. The former service would necessitate less adjustment and repair. Less loom fixing means contented fixers and weavers. As a weaver in an "Electric" mill remarked about the motor drive: "It runs just the same all the time."

The reader is not to infer from these remarks about good running work that the motor drive alone will produce this much to be desired consummation. It requires overseers, who, through long years of practical experience, have mastered a knowledge of twists and drafts and the other details of their trade, in order to take the proper stock and finally work it into a finished product of which the mill may be proud. The motor drive is only an additional tool, which, in the hands of a competent workman, can be of tremendous value.

"Safety First" crusades are becoming the rule in many industries and, in this connection, it is to be noted that electric drive in cotton mills removes many possible causes of accident. Anything that we do not fully understand we are apt to fear and for this reason electricity, in its infancy, was regarded as a menace. Town councils have been known to legislate against the extension of power lines into their villages. That time has passed, for every one has come to know a great deal about electricity and so few accidents have been reported from it that perfect confidence has come about. In cotton mills, particularly, such low voltages are used that even in case of contact with a conductor, death would not result and such careful installation is required by the Underwriters that contact is well nigh impossible. Accidents from this source are practically unheard of but in mechanically driven mills, very occasionally, a pulley bursts or a belt laps up or entangles an operative so that serious mishaps occur, with their train of suffering and damage suits. Also where purchased power is obtained from a central station the danger of boiler or fly wheel explosion is eliminated.

The incidental uses of electricity in the mill are too numerous to mention. Motor driven fans, pumps and humidifier heads; electric lamps and electric stop motions on machines all have done their part toward simplifying the work or making better conditions for the worker.

It would be presumptious to claim that the electric drive alone can make contented help, but no chain is stronger than its weakest link and having at hand good stock, good machinery and above all a good superintendent, one with a fund of patience and a knowledge of human nature—then the individual motor does furnish the final link to complete the chain of good will that will voluntarily bind the operatives to the mill and keep each one well contented with his part as a cog in the efficient human machinery of modern cotton manufacture.

The nun (*Eriodendron orientale* and *E. anfractuosum*, or white silk-cotton tree, which yields the cotton commonly known as kapok) does not appear to be a native of Siam, for it is never found to grow in a wild state; it is even scanty in the neighborhood of villages, where it has made its appearance within the last 20 years or so. It is cultivated in Siam chiefly with a view to forming hedges, because it grows rapidly and can be planted in thick rows. Moreover, its branches and foliage are so sparse as to cause no serious encumbrance and to cast but little shade, so that fruit trees planted under the nun thrive fairly well. It attains a medium height of about 50 feet and bears fruit rapidly. Its blossom resembles those of the ngiu and the ngau, except that it is only about half the size; its color is white or pale yellow. The fruit or pod is 5 to 6 inches long and from 7/8 to 2¼ inches in diameter. It does not burst when ripe, as does the ngiu and ngau, but remains intact upon the branch. The silk cotton within is either yellow or creamy white.

The bulletin known as Special Agents' Series No. 86 is a detailed study of the Japanese cotton industry by W. A. Graham Clark, commercial agent of the Department of Commerce. The report reviews the history of the industry and trade from the establishment of the first spinning mill to the present time and analyzes the kinds of goods the Japanese are offering and shows to what extent they are cheapened by the use of inferior cottons, inferior construction, weighting materials, etc. Special attention is given to the methods employed by the Japanese to find a foreign market for their goods and to wages, cost of production, factory legislation, and the capitalization and profits of mills.

The Relation of Capital and Labor

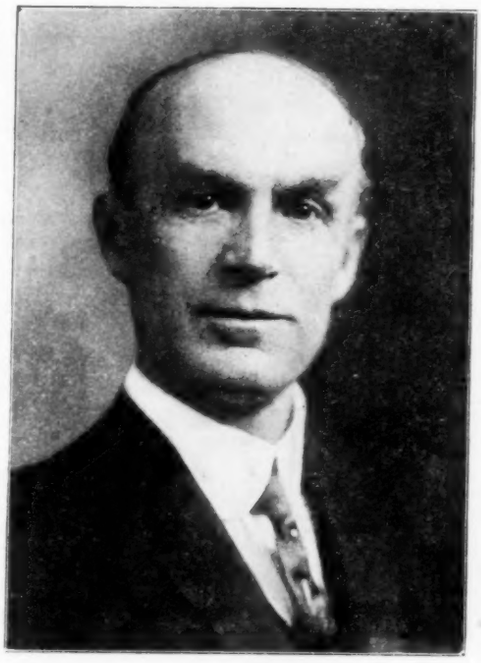
BY HON. SIMEON D. FESS*.

Two views of labor have been held by the race—one looked upon it as an involuntary compulsion to be shunned as an evil; it was variously pronounced a task, a burden, a curse. The other view looked upon it as an opportunity, not necessarily an end in itself, but rather a means to an end—the end being the achievement. The former view was due largely to the stratification of society, which was built upon the basis that labor was of the many for the sake of the few. Even in the most cultured days of Greece the great mass of the population, fully nine-tenths, were mere slaves of the small proportion known as citizens. When the scholars of that country were gathered in the academic groves of Athens, to be taught by Plato, and Aristotle most of the teachers were consigned to a life of labor with no control over their time or talent.

The same deduction in a sense could be made of Feudal Europe down to the 13th century. In a smaller measure this stratification could be seen in modern Europe.

Probably it is true that our own country, the home of the great middle class population, offers the best concrete examples of a reversal of the rule so long observed. Here we can see the promised fruition of a principle that labor is not a curse, but a blessing. There is one steady tendency to be observed—power and privilege gradually slipping from the few, and an equally noticeable growth of these among the many. The one is constantly lessening while the other is increasing.

In our own country there is a constant growth of appreciation for the average man. The credentials of success of preferment are no longer birth, name, possessions, position, or accident. The poor of today may be the rich of tomorrow. The laborer of today may be the captain of industry tomorrow. The weak of today may be the strong of tomorrow. The ruled of today may be the ruler of tomorrow. This possibility dates to the honor with which labor is held in the world. Whatever may have been its level in the past, it is one of honor in the future. The mere fact that the laborer of today may become the employer of tomorrow is an assurance that is destined to be held in proper regard. Long ago our country admitted that it was not the thing done, but the manner in which it was done that dictated its rank. Some labor with brain alone—the professions, others labor with hand alone—menial service, while still others labor with hand directed by trained brain—that is the skilled worker. It is the purpose of modern society to multiply this skilled class. This is the purpose of the vocational school which has taken such deep hold upon the country that congress has now a bill before both bodies providing federal aid for such training to the amount of seven million dollars annually. It is the conviction not only of the Vocational Commission, but of most thinking people, that our future welfare as a nation, lies in our ability to insure a happy and successful worker. The vast mass of our people must live by the work of their hands. The problem is to guarantee not only the maximum of product, but also the acme of joy to the worker. As I said on the floor of the House, "The first and chief duty of any government republican in form, in which its character must depend upon the intelligence of the body politic, is education, the broadest possible educational training to service to the state and nation.



HON. SIMEON D. FESS.

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"The real function of government is to produce a high grade citizenship. Indeed, that is the ground for government, with all the burdens entailed. This citizenship may and must be viewed from two angles —first, the state, and, second, the individual. The character of the citizen's activity is twofold; it is purely mental; which until recently expressed itself in professional occupation, or it may be physical, largely, which is seen in manual labor. The latter represents the great bulk of any nation's people. The educated product of a community is divided into three groups, viz, the college graduate, the high school graduate, and those who leave school before the high school is reached. The college graduate represents less than 2 per cent, the high-school graduate numbers less than 6 per cent, while those below the high school are at least 93 per cent. Most obviously the 93 per cent must be the chief concern of the state.

"With no systematic vocational program, our present system does not reach the great mass of the youth by giving that sort of education that will best fit them to adjust their lives to the work they must follow after leaving school. The maximum results of education stop short of the professional rank. It is not adapted to the most needed knowledge and training; it does not seek to produce the highest skill, and really is that unsettling process for failure rather than success.

"The country's error with the great mass of our people is due to the wrong conception of the object of education, which is confined to simple culture, with little reference to the real work of the citizen.

"Broad general culture is the chief goal of the teacher—the altruistic leader. In this class are placed all great educational lights and leaders—Pestalozzi, Kant, Fichte,

*Member of Congress, Sixth District, Ohio.

Arnold, Channing, Wayland, Horace Mann, and Emerson.

"Most of these spiritual leaders regarded education its own reward. A boy or a girl should be educated primarily because he was a human soul, which would be most sinful to allow to remain unopened. The chief measure of any system of education was the amount of soul power expressed by spiritual appreciation that could be realized.

"While this conception should be kept before the nation, it is perfectly apparent in this workaday world that this goal is not the lot of the vast mass of the human family. The nation must face the problem as it is and not as it ought to be; however, the final goal should not be lost sight of. In the condition which confronts the nation rather than a theory, over 90 per cent, or nine pupils out of every ten, will be called on by the state to make a living by the employment of manual labor—work with their hands. A system of education that does not care for the nine-tenths is notoriously faulty. This great body of pupils are not necessarily what they are by choice, but by circumstances which they can not control, whether by lack of foresight and ability is not at issue. However, the state by a proper system of education can minimize the evil influences and multiply greatly the useful products of the talents awaiting development. The system should seek to enable the youth to command his environment. If he is on the farm and is to follow the plow, sow the crop, and reap the harvest he should be trained to do it, not as his father did, necessarily, but in the best way to compel the earth to yield its maximum product with a minimum expenditure of energy. His agriculture should be scientific. If he is in the city, then the work of his hand should not be after the methods of his ancestors for generations past, but should reflect knowledge of the subject, science, and skill in handling—art.

"The interests of the farm call for agricultural training schools. The congested urban life calls for vocational schools, combining the science of the technical school and the art of skill of the industrial school.

"What has been accomplished, and how, on the farm? What can and should be done among the urban peoples?

"The real purpose of the state should be to keep open to every youth an equal opportunity to make the most of life. It should assist in clarifying purpose and presenting opportunity. The boy who is to till the soil should be led to it in the best possible way. The boy or girl who is to work in a shop should be educated for it. In other words, the state should assist in preparing every citizen for some vocation. This duty is twofold—first, its reflex upon the worker, and, second, its effect upon the state."

I see no better way to solve the problem of labor and capital, which becomes acute at periodic times, than a proper conception on the part of both of the rights and duties of each—which must be expressed by the word cooperation and which in turn demands efficiency on the part of labor and rational consideration on the part of capital. The sensitive feature of this problem is revealed continually by numerous items such for example as the recent report of the Industrial Commission on unemployment in the United States. All are agreed on the fact of unemployment. It is not psychological. But there is a wide difference as to the causes. The significant difference is displayed by the 183 witnesses affiliated with labor in contrast with the 181 affiliated with the employers of labor. A careful study of these divergences reveal the acute difference. One group assigns one line of causes; the other an entirely different line. If there is no agreement on the cause, there can be none on the remedy. This confusion may be due in part to a failure in comprehending the real situation, in part to prejudice, and in part to the work of propaganda. So long as the problem is viewed as a contest, rather than as a cooperation, extravagances must be expected.

John Stuart Mill once said you must always demand more than is possible to grant in order to secure as much as possible. If this policy is pursued, and the demands become regnant as is so often the case, these two great forces become armed camps of opposing forces instead of affiliated bodies for mutual helpfulness. A proper conception of this problem would avoid the unwisdom of the demand for legislation discriminating between citizens in a republic where every citizen is equal to every other citizen under the law. No thoughtful citizen can contemplate such legislation with equanimity. A law which declares an act unlawful if performed by one man, and lawful if committed by another is more serious to this republic than is at once discerned. It is based upon a misconception of the relation of capital and labor. This same serious situation is revealed in such statements as "the business man holds the balance of power in congress," or "labor has the balance of power." Such propaganda proceeds upon the basis that the two are enemies.

The solution of this problem lies in a better comprehension of the relation of capital and labor. This relation depends upon a recognition of the rights of both. Capital has rights that labor must respect—labor has rights that capital must respect. These rights are not antagonistic, but cooperative. So long as the two are regarded as at emnity the problem is serious, and both must suffer. Capital, which assumes all the risk, must be conceded a profitable investment. Its owner must be granted the right of contract, with the remedy for its violation. Labor, on the other hand, must be conceded fair wages, reasonable hours, steady employment and the right of contract with remedy for violation. It can also demand certain assurances, as against unsanitary conditions and caution against injury, etc.

Capital must depend upon a degree of cooperation and efficiency on the part of labor in order to insure labor's rights. On the other hand labor must depend upon the willingness of capital to guarantee those rights not merely as rights of labor but as duty of capital.

The profits of capital must look to the efficiency of labor, and the efficiency of labor must look to the profits of capital. The two must be in accord, each must see the other's advantage, else both must waste.

A commission agent in South America informs an American consul that he desires to represent American manufacturers of cotton cloth, underwear, hosiery, etc. Prices, c. i. f. destination, terms, commisison offer, and full information should be sent with the first letter. The agent proposes to sell for cash on delivery to responsible firms. He states that he can place orders at once. Correspondence may be in English. For further information apply to the Bureau of Foreign and Domestic Commerce, Washington, D. C., and refer to file No. 14453.

Window Protection an Economic Necessity

BY A. H. PERRY.

Fire protection as an applied science has made enormous progress in the past fifty years, and while the annual fire loss in this country hovers around the $300,000,000 mark, conditions here are such that only a high degree of efficiency prevents a figure many times as great.

Seventy-five years ago it was practically impossible to secure fire insurance on a cotton mill on any terms short of confiscation. In point of danger cotton mills and powder factories were in the same category. In them were combined about all the features of construction and methods of operation that modern experience has shown to be most conducive to the start and spread of fire. Today cotton mills are regarded as almost ideal risks and are insured at a rate so low as to be no longer a factor in the financing of the company.

Two influences have served mainly in bringing about this change: the work of Edward Atkinson and the engineering organizations founded on his work, and the automatic sprinkler. It was realized early that the greatest economies to be effected lay not in the underwriting but in the engineering field. That to secure ultimately cheap insurance it would be necessary to improve physical and operating conditions—to erect buildings that in construction and placement would offer the greatest resistance to the spread of fire; to equip with such apparatus and devices as would announce promptly the presence of fire and be most effectual in its extinguishment; to eliminate all unnecessary causes of fire, whether of carelessness or manufacturing processes, and to train employees in the methods of fire fighting.

To bring all this about has been a problem of vast ramifications, in the solution of which most of the arts and sciences have been drawn upon, and it is doubtful if the comparative value of the results secured has been exceeded by those of any other work ever attempted in this country. New types of buildings have been designed, economies in all the stages of manufacture have been effected, fire fighting apparatus of wonderful efficiency has been evolved and the whole working personnel has been put on an entirely different plane. Many men and many interests have contributed to this work, and while the general fire loss of the country is abnormally high in comparison with that of Europe, the modern cotton mill is a monument to the skill of the Insurance Engineer.

The cotton mill of today, of slow-burning construction, with an equipment of sprinklers and automatic alarms and with no direct communications from floor to floor, offers but small likelihood of destruction by fire occurring within its own walls. There is little in all this, however, to provide against the attack of fire from without.

One of the most potent conditions tending to augment the fire loss is what is known as the exposure hazard. This defines the likelihood of a building to become ignited by a fire from without its walls. Statistics, covering a number of years, show that nearly one-third of the fire loss of the country rests on this cause. Fire is communicated from one building to another, in almost every case, through the wall openings—through doors or windows. To provide against this danger, fire protectionists have devoted some of their best endeavors, and while the modern cotton mill is excellently armed to deal with its internal troubles, there is the possibility of fire being communicated to all its floors at the same time, from fire in a neighboring building.

Insurance underwriters generally regard a brick wall increasing in thickness from top down, as the most satisfactory protection against the attack of fire from the outside. If a builidng were enclosed in solid brick walls on all sides, carried three feet above the roof level, it would be practically safe against fire from the outside. But the public is not yet ready to sacrifice the space necessary for the interior courtyard that would be required for light and ventilation purposes under such conditions.

No more valuable branch of underwriters' investigation has been taken up than that which concerns a limiting of the spread of fire, and it is to this end that wire glass lends itself so admirably.

Since wall openings must normally be open more or less of the time either to traffic or passage of light, the first type of protection took the obvious form of a sheet-iron door or shutter, arranged to be closed at night. Practical experience, however, soon showed that any considerable amount of heat warped the sheet-iron shutter to such an extent as to impair seriously its usefulness. A great improvement on the iron shutter came with the design of the tin-clad wooden shutter, a device largely used for many forms of wall opening protection. The tin-clad shutter, however, shared with the sheet-iron shutter several defects. It was normally open in daylight hours, during which at least one-half of the total number of fires occur; it could not be closed quickly or certainly in the moment of emergency; when closed it did not permit a night fire in a building to be seen from the outside; it did not lend itself readily to the adoption of devices to close it automatically in the event of a fire; it was subject to rapid deterioration, and it was very unsightly.

A substitute, which eliminates these weaknesses, besides possessing many advantages, is to be found in wire glass, set in sash and window frames of some fire resistant materials, preferably metal.

The value of the service performed by wire glass in reducing the fire hazard is thoroughly recognized by underwriters generally, in every locality embraced within the jurisdiction of any of the fire insurance rate-making bureaus. Its installation is granted a reduction in fire insurance premiums, amounting in the average to five cents on the hundred dollars.

Perhaps no better statement of the comparison between shutters and wire glass windows has ever been made than is contained in a paper read by ex-Chief Croker of the New York Fire Department before the International Association of Fire Engineers:

"Shutters of iron or metal-covered wood may protect windows if they are carefully closed, but in practice such shutters fall far short of the purpose for which they were intended. When the crisis comes the shutters are frequently found open. Wire glass is, in my opinion, the fire stop

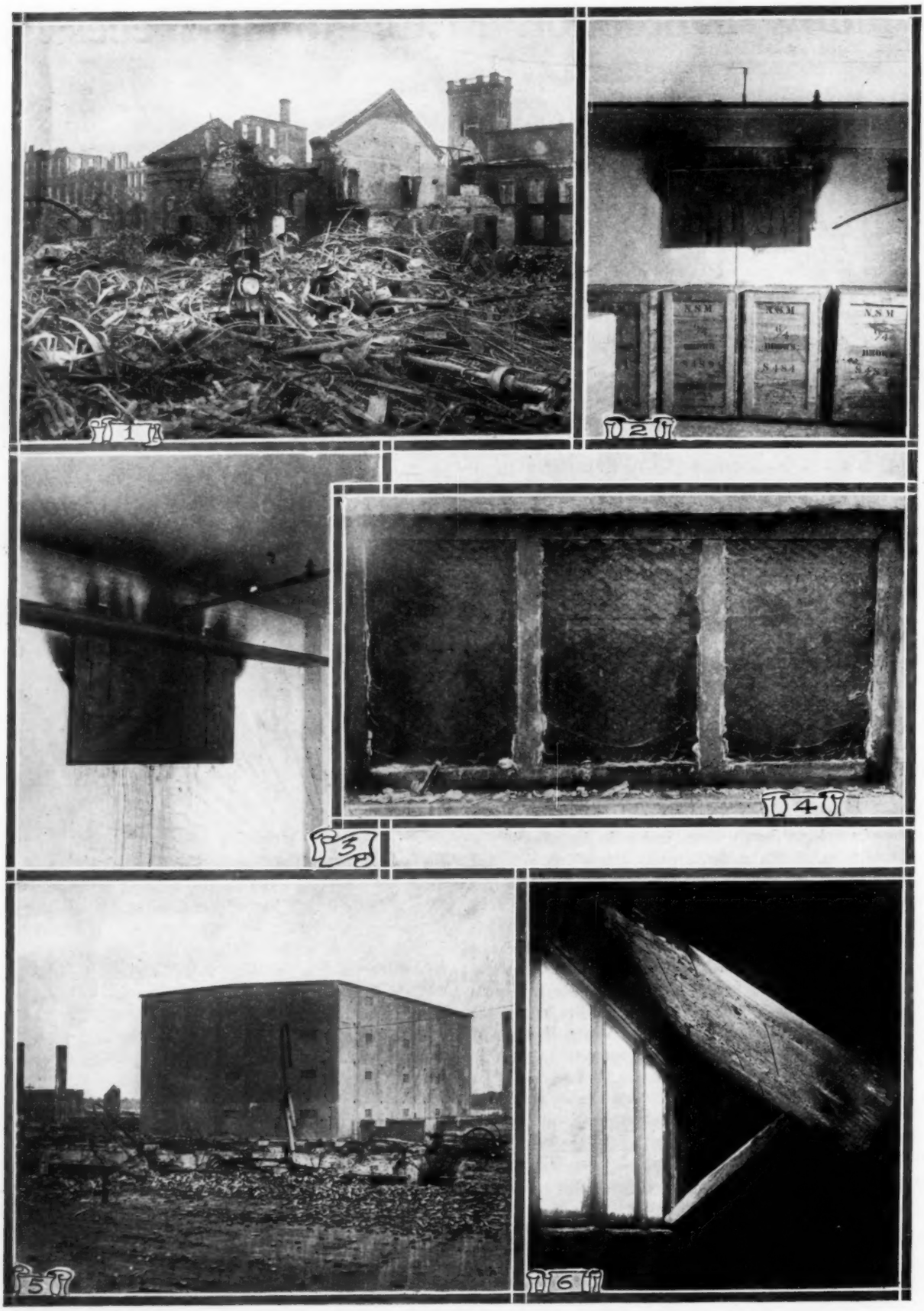


Fig. 1, A typical view of the Naumkeag Mills, Salem, Mass., showing the total destruction of unprotected buildings. Fig. 2, Interior view of Concrete Storehouse, Naumkeag Mills, showing the undamaged condition of its contents. Figure. 3, A closer view of one of the shutters. Note the close proximity of the sprinkler head. Not a sprinkler opened in this building. Fig. 4, Wire glass window after the fire. Fig. 5, Concrete Storehouse number one, Naumkeag Mills. A monument to modern construction which survived the Salem Conflagration. Fig. 6, A shutter and wire glass window after the fire.

for windows and skylight openings—wire glass set in metal frames. It supplies the requisite light and ventilation as well as protection against fire. . . . It enables the fire chief to size the situation and direct his men intelligently. The location and volume of the blaze are immediately disclosed, and if the conditions warrant it the fireman can effect an opening for the stream with his fire axe. . . . Succinctly stated, wire glass has yielded two fixed values as its contribution to fireproof building construction. It retards fire without hiding it—permits the blaze to declare itself. It can be cracked, but it cannot be scattered. If fractured, it retains its place."

Besides its properties as a fire retardant, wire glass serves other valuable functions in cotton mill economy. In the ribbed and figured surfaces, it adds greatly to the effective diffusion of light, while one type prevents entirely the drip of condensation from the under side of skylights. This latter has a channelled surface, with the corrugations about eight to the inch. The contour of the surface is such as to give the greatest capillary attraction, and as a result all condensation is held to the under side of the glass and conducted down to the gutter at the foot of the sheet. This does away with the double glazing now so frequently employed.

It has always been held by the Mutual Insurance engineers that if a mill were properly constructed and suitably equipped with automatic sprinklers, fire-hose and pumps, it was practically immune to the attack of fire from without. The experience of some 75 years in many parts of the country and on many occasions of extreme stress appeared to bear out this contention. This argument was particularly strengthened at the time of the Patterson conflagration.

On June 25th, 1914, a fire of considerable magnitude—of such magnitude as is generally known in this country as a conflagration—occurred in the city of Salem, Massachusetts, and there was one element of this conflagration which presented an unusual if not entirely unforeseen phase of loss. This was the destruction, practically *in toto,* of the mills of the Naumkeag Steam Cotton Company.

The Naumkeag Mills had grown up and been nurtured in the wisdom of the factory mutual companies "continuously since 1848." The mill property was surrounded on three sides by water. The fire started over a mile away and was more than four hours in reaching the outskirts of the plant. Ample opportunity was had for representatives of the mutual companies to reach the ground, to organize the fire fighting equipment and to give to the whole situation the benefit of the most expert direction.

The net result was the entire destruction of the Naumkeag plant with the exception of two storehouses. Some 20 buildings with their contents were burned, entailing a loss of between three and four million dollars.

The only buildings in the entire plant that escaped destruction were the No. 10 Storehouse and No. 1 Storehouse. The former building originaly was a gasometer, has joisted roof covered with asbestos roof-covering, noncombustible cornice, and brick walls. These had but two openings, protected by double fire doors.

Number 1 Storehouse is of reinforced concrete construction, walls, roof and floors. There are some small glass windows in mostly fixed metal sash, which are protected in addition by wood tin-clad shutters on the inside of the buildings, hinged at the top and swinging vertically, and these were held normally by fusible links. These links all melted and allowed the shutters to close. Two stories of this building contained finished goods in cases, but so completely effective was the window protection, and so well did the concrete walls stand up against the flame, that fire did not enter the building. Not a sprinkler opened, and the contents are intact. The damage to the building is so slight as to be almost negligible.

Storehouse No. 1 stood on the western side of the mill property about at the center, and received the full attack both of the main conflagration and the burning of the adjoining mill buildings. Yet it stood up unharmed itself and with its contents intact; all this for the one reason that the window openings were properly protected. There has never been in the history of fire underwriting a more striking instance of the value of such equipment.

In view of the extremity of the conditions, it is not likely that either wire glass windows or interior shutters alone would have accomplished the result. The wire glass bore the first brunt of the onslaught, giving ample time for the operation of the shutter links, and the shutters themselves backed up the defense in the one or two instances where the temperature exceeded the melting point of glass.

Window protection costs money, but the complete equipment of the Naumkeag Mills would have cost but a small fraction of the three and one-half million dollars lost. Similar potential conditions exist in thousands of plants all over the land and our excessive fire loss will be lessened only when exposures are properly guarded against —when contributed fires receive the same attention as fires occurring within the buildings themselves.

Bolivia is somewhat an exception to the ordinary South American markets, as trade in the Republic in cotton and other textiles goods is decidedly better than in the adjoining states. White shirtings and long cloths in the usual French finishes are in fair demand, and to some extent gray domestic cloths also, although in the latter class of goods there is some competition from the native Peruvian makes, and to a lesser extent from Brazil. Oxford shirtings, regattas, and other colored styles are also in some request, but the Hamburg houses, which are well represented in La Paz, secure a large share of the trade, as they do in flannelettes and union dress goods. Yorkshire coatings and various specialties in woolen goods have a fair sale in the upland Provinces, but the cost of transit considerably affects this branch of the trade. Goods for this market, in consequence of the geographical position and the absence of seaboard, have to be forwarded through the Chilean ports of Arica and Antofagasta, and to some extent through Peru via Mollendo. The heavy railway charges and the subsequent cost of mule carriage into the interior adds considerably to the cost of the small bales which are a feature in this trade. As a rule, light-sized and pure cloths are in more general request.

An American consul in South America has been advised by an American firm, with several branch houses in South America, that it wishes to receive communications from American manufacturers of textiles of every description, and shoes. Catalogs, prices, etc., and small samples should be sent to the firm in Latin America, while larger samples should be send to the New York correspondent of the firm. For further information refer to the Bureau of Foreign and Domestic Commerce, Washington, D. C., and refer to file No. 14261.

A Review of the Year in Cotton

BY H. & B. BEER, NEW ORLEANS.

Cotton has suffered more from the European war than any other agricultural product in the United States. Compared with this time one year ago the price of middling is now, (the middle of December) 7 cents in this market against 13⅛ cents, a difference against the farmer of about 6 cents, or $30 per bale. It is evident, therefore, that the war has cost the South in cotton alone over $400,000,000.

We attribute the big decline in the value of cotton this season to the inability of the United States, though a neutral country, to provide sufficient tonnage to move its farm products to foreign shores, because if America was in a position to export its cotton, the decline would probably not have been one-half as great as it was.

With the price of the staple down to about $15 per bale below the cost of production, or 6 cents on plantations, whereas it costs about 9 cents to raise cotton, we believe the European spinners, if the tonnage was available, would have been glad to take advantage of being able to buy the raw cotton in the neighborhood of 9 cents per pound in the interior, the presence of the war notwithstanding.

The government crop estimate, issued on December 10th, which indicated a yield of 15,966,000 bales of 500 pounds gross weight, when reduced to commercial weights, and allowing for linters, etc., points to a commercial crop of about 16,262,000 bales, and fully confirms the larger of recent private crop estimates.

According to the government estimate, the indicated yield by states, exclusive of linters, is as follows, compared with last year: Virginia 24,000 vs. 23,000; North Carolina 950,000 vs. 793,000; South Carolina 1,500,000 vs. 1,378,000; Georgia 2,650,000 vs. 2,317,000; Florida 75,000 vs. 59,000; Alabama 1,690,000 vs. 1,495,000; Mississippi 1,275,000 vs. 1,310,000; Louisiana 460,000 vs. 444,000; Texas 4,560,000 vs. 3,945,000; Arkansas 1,040,000 vs. 1,073,000; Tennessee 365,000 vs. 379,000; Missouri 75,000 vs. 67,000; Oklahoma 1,250,000 vs. 840,000; California 37,000 vs. ———; all other states 15,000 vs. 33,000; total 15,966,000 vs. 14,156,000.

There was recently issued by the Census Bureau a report on the supply and distribution of cotton in the United States for the first four months of the season. The following are the comparatives:

	Bales This Year.	Bales Last Year.
Cotton consumed in the United States Nov	420,663	456,356
Cotton consumed in the U. S., Aug. 1 to Nov 30	1,671,378	1,843,064
Manufacturer's stocks U. S. Nov. 30..	1,060,765	1,426,638
Independent warehouse stocks Nov. 30th	5,008,374	3,262,714
Active spindles in the U. S.	30,441,315	30,949,337

As will be seen by these figures the consumption of cotton in the United States during the first four months

IN COTTON PICKING TIME.

of the season, or from August 1st to November 30th, was 172,000 bales smaller than for the same period of one year ago. On the other hand it will be noted that mill stocks on November 30th in the United States were 366,000 bales less than on the corresponding date of last year. Stocks in independent warehouses in the United States at the close of November were 1,745,000 bales larger than they were one year ago.

All the bearish features in the market are known and have probably been discounted, as the very low price of the staple reflects all the unfavorable developments that have come to the surface so far. It is likely, therefore, that any change in the future will be of a favorable nature, for while farmers hold large stocks, they are in a position to hold at this level, while spinners stocks are low and will have to be replenished.

The American spinners should take full advantage of the present opportunity and contract for as much cotton as they can can finance, as France, England and all the neutral foreign countries are buying more freely of late, probably for their requirements for the balance of the season, as well as for the future.

In the dawn of history plowing was done with a forked stick, but the Egyptian system in those early days was the marvel of civilization, they built warehouses in times of plenty in order to take care of the surplus, which would tide them over a famine, which was bound to come. We are in a year of plenty now, and the American spinner should profit by the foresight of the wise men of the East, and lay in a big stock of cotton before Europe gets the best of the bargain.

We would not be surprised if cotton has not already seen the low price of the season, at any rate we would call attention to the fact that in three previous big crop years—1904, 1908 and 1911, the lowest prices for cotton were witnessed in the month of December, around the holidays, and it may be that history will repeat itself again this year.

The advance in the price of the staple, which started with the opening of the new year in the seasons referred to, was mainly due to the fact that the price was down to the cost of production and owing to an anticipation of a reduction in acreage, which was realized in the spring.

This year cotton is about 3 cents, or about one-third below the cost of production, and as grain provisions are very high, as a result of the foreign demand, present and prospective, there is every reason to believe that the reduction in the acreage of cotton next spring will be the greatest in the history of modern days. The merchants are carrying the surplus of this crop, and the southern banks and bankers have large loans out on cotton. It is not to be supposed, therefore, that they will make liberal advancements to grow cotton when it is selling so much below the cost to grow it. On the contrary, cotton is a credit crop, about 80 per cent, and the policy of the merchant and banker will be to keep down the cotton acreage as much as possible and encourage the planting of a large increase in grain. A great deal of wheat has already been planted in the South, planting of a large increased oats acreage is now going on, and the greatest increase in the grain area will come in the spring when corn planting time arrives.

In addition to this feature of the situation, the South is now being drained of its mules and horses for use in the European war. Thousands of live stock have been shippped from Galveston, New Orleans and Savannah, and the movement of shipping has only commenced. Furthermore, owing to the absence of water communication with Germany, the supply of potash for fertilizing purposes is lacking, and without this plant food the crop cannot thrive well in the South Atlantic states.

In conclusion we believe that prospects for higher markets after the holidays are more favorable, as business in the United States is gradually improving. The finances of the country are in good shape, for while the South has lost by the war, the West has profited. Better days are coming for the cotton people, nevertheless, and, we hope, for the whole country.

ACCEPTANCES IN BUSINESS TODAY.*

BY LANG S. DAGGETT.†

Acceptances, or accepted drafts, have been the subject of wide discussion since the passage of the Federal Reserve Bank Law, owing to the fact that they would be the means of supplying real two-name commercial paper to be used for the purpose of rediscounting by member banks with the reserve banks. It would appear that the primary object of the new law is to secure a flexible currency and credit system based on commercial paper, the supply of which would expand and contract in accordance with the movement of merchandise, and it is of the utmost importance that paper used for this purpose, shall furnish the best security that can be obtained. Of course the law provides for the proper gold reserves to be maintained.

The National Association of Credit Men at their annual convention in Rochester last June, passed resolutions to the effect that it would be desirable to encourage their members to assist in providing two-name paper by having their accounts closed by *acceptances*, instead of carrying them on the open ledger. This Association, in defining paper eligible for rediscount, recommended that the percentage of one-name paper to the total rediscounts of any member bank, should be limited to 90% the first year, 85% the second year, 75% the third year, and that two-name paper or commercial bills be allowed a slightly lower rate of interest than one-name paper.

In reply to a request from the Reserve Bank Organization Committee that they define commercial paper eligible for rediscount, the New York Clearing House Association stated that while the present system of open accounts could not be discontinued abruptly, it is of great importance that it should be gradually supplanted by the system of accepted drafts. Prominent members of the National Association of Clothiers have expressed the opinion that the adoption of the system of acceptances is most desirable and that if it is possible, it should be put into effect in the clothing trade. In an address before the Clothiers' Convention at Atlantic City last June, Robert W. Bonynge, member of the National Monetary Commission, called attention to the danger of inflation in case one-name paper was admitted for rediscount without limit, and stated that business men should support the Federal Reserve Board by encouraging the creation of a supply of

*Extracts from an address before the National Association of Garment Manufacturers.

†Treasurer of the Putnam-Hooker Company.

two-name paper which could only be issued when representing an actual merchandise transaction. Prominent bankers throughout the country, have expressed the opinion that if the new currency system is to operate with the full measure of success expected of it, that commercial interests should use their best efforts to create a supply of real two-name commercial paper. The Federal Reserve Board has ruled on commercial paper for rediscounting, making both two-name and one-name paper eligible.

The Federal Reserve Board will require, where single-name paper is admitted that it shall bear a stamp signed by the member bank discounting the paper, stating that it is eligible for rediscount under the Federal Reserve Board regulation requiring that a signed statement of the concern making the paper shall be on file with the bank offering for rediscount, and that such credit files shall be open to inspection of any examiners appointed by the Controller of Currency or selected by the federal bank discounting same.

It is further provided that the affixing of the stamp stating that such paper is eligible for rediscount, shall be a solemn and binding declaration by a member bank that the statement has been examined from this point of view and that the paper bought complies with all the requirements of the law.

For the time being certfied accountants' statements will not be required, but this matter is reserved for regulation at a later date. From this action of the Federal Reserve Board, it is very easy to see that the tendency is going to be toward two-name commercial paper, owing to the difficulties attending the establishment of one-name paper for rediscounting purposes.

In adopting this method of acceptances, it would be customary for the seller to forward to the buyer with his invoice, a draft coming due the day the bill is due. In case the buyer did not wish to discount in ten days, he would accept the draft across the face making same payable at his local bank and return it to the seller. The draft for acceptance would bear the date of invoice it covered; thereby showing to the bank that it was not paper given for a past due account, and that it was secured by their customers' accounts receivable. This system has been largely used in foreign countries for many years, and is also in universal use in Canada at the present time.

The detail work involved in handling small notes would seem to be an objection, and could probably be avoided by having the current account for the month closed by acceptance of date of the average date of bills.

As merchants, we are all interested in supplying our business with the best financial facilities at all times; that is, we want to borrow as easily as possible and at the lowest available rate of interest. To do this we must supply the highest grade of security to the bank, and that is paper secured by our live accounts receivable, or in other words, accepted drafts. To judge the value of such security, a banker does not have to study a financial statement, the details of which he may not be in a position to verify. In judging your credits, if your customer is willing to give you an acceptance, it is the best evidence you can have of his ability to meet your account when it falls due, or in his confidence in his ability to do so. I think we all appreciate that credit is too cheap, and in the present age of close profits, the losses on bad debts are too great.

The closing of accounts by acceptance is going to improve credit department methods, and result in more careful and intelligent checking of credits, for no one would want the drafts he had discounted at his bank returned unpaid. We would also be careful that the customer whose paper we offered for discount had a good rating, as this would be an indication to our bank of the class of trade we were selling. This would result in pressure being brought on sales departments by credit departments, to increase their efforts to sell the best class of trade. It would undoubtedly be an advantage to growing concerns located in small towns, where often the merchant or manufacturer finds he has outgrown the banking facilities of his town, for if he is willing to give acceptances, the concern from whom he buys, would no doubt, as a result of increased confidence and the desirability of such paper to the banks, to grant a larger line of credit than he will extend under the present system.

If the custom of closing accounts became general, much of the expense of collecting past due accounts would be eliminated, and the saving on this, especially in large institutions, where collection departments are maintained would be great. Some of us, have been perhaps interested in failures, where our customers, with the best intentions, have started the practice of selling their accounts receivable, and then in the time of financial stress, have forgotten to include this information in their statements, thereby making a false showing of the assets back of their liabilities for borrowed money and merchandise. The necessity for this practice would be removed if the receivables were covered by paper which would be readily discounted.

The advantage of the system of drafts for acceptance is recognized by some of the members of your Association, who are already taking steps to put this into effect in their business. The president of one of our large Cincinnati banks recently told me that quite a number of its customers were having their accounts closed by acceptances, which the bank would use for rediscounting with the reserve bank at Cleveland. The objections to closing accounts, caused mainly by the fact that it has been the custom to give notes for past due accounts, I think, will rapidly be overcome, as the acceptance which carries the date of invoice on its face, shows that it is not given for a past due account, and rather than a detriment, it will positively increase the credit standing of any concern willing to accept a draft for an account it owes.

ANNUAL REVIEW OF THE FALL RIVER MILL STOCK MARKET.

BY G. M. HAFFARDS AND COMPANY, BROKERS,
FALL RIVER, MASS.

There is little to say this year in the way of a review of the local cotton mill stock market. For the entire past year transactions have been very few and while there has been no great pressure to dispose of stocks, there has been an equally slow disposition to invest. This is due not to any inherent weakness in the manufacturing situation, so much as a reflection from the general field of business which, on account of its upheaval financially and economically, has lessened the purchasing ability of the people so as to cause a much lessened demand for the product of the mills.

Locally the situation has been at a stand-still, there having been no expansions in capital while returns have been the lowest, with one exception, in a period of 10 years; given in figures, a distribution of $1,243,793, or equal to 4.20 per cent against a distribution in 1913 of $2,075,452, or an average of 7 per cent.

Depreciation in the value of local properties has demonstrated what we have before referred to, that liquidation has been pretty thorough, it amounting to not quite 5 per cent on the capital for the year; a very low figure, when compared with other lines of investments.

No new mills are being contemplated and this, to one optimistically inclined, with no new buildings, a continued growth of the country and the possibilities of South American trade, holds promise of better times and, while we believe it may be slow in growth, yet upon the turning of the corner, a foundation will have been laid more solid and lasting than we have enjoyed for a long period in the past.

Quotations on Fall River mill stocks, December 23d, 1914, were as follows:

MILL STOCK.	PAR VAL	BID	ASK
American Linen Co.....	100	50	60
Ancona Co. (Prfd).....	100		
Ancona Co. (Common).....	100		
Arkwright Mills.....	100		65
Barnard Mfg. Co.....	100		60
Bourne Mills.....	100	101	
Border City Mfg. Co.....	100	93½	
Barnaby Mfg. Co.....	100		
Chace Mills.....	100		102½
Cornell Mills.....	100	140	
Conanicut Mills.....	100		95
Davol Mills.....	100	85	
Davis Mills.....	100		
Flint Mills	100	93	
Granite Mills.....	100		95
Hargraves Mills.....	100		
King Philip Mills.....	100	102½	
Laurel Lake Mills.....	100		103½
Lincoln Mfg. Co	100		72½
Luther Mfg. Co.....	100		122½
Merchants Mfg. Co.....	100		80
Mechanics Mills.....	100	70	76
Narragansett Mills.....	100		102
Osborn Mills.....	100		98½
Parker Mills.....	100		
Pocasset Mfg. Co.....	100		100
Richard Borden Mfg. Co....	100	118½	
Sagamore Mfg Co.....	100		
Seaconnet Mills.....	100		55
Shove Mills.....	100		75
Stafford Mills.....	100		75
Stevens Mfg. Co.....	100		
Tecumseh Mills.....	100	100	105
Troy C. & W. Manuf'y.....	500		
Union Cotton Mfg. Co.....	100		170
Wampanoag Mills.....	100		75
Weetamoe Mills.....	100		80

FALL RIVER STATISTICS COMPILED BY G. M. HAFFARDS & CO.

CORPORATIONS	Par Value	Capital	Amount	and When Paid.			Total 1914	Total 1913	No. of Spindles	
1 American Linen Co.	100	$ 800,000					0	3	94,528	1
2 Ancona Co.	100	300,000A	Jan. 1½	April 1½	July 1½	Oct. 1½	6	6	40,080	2
3 Arkwright Mills	100	450,000					0	0	68,432	3
4 Barnard Mfg. Co.	100	500,000					0	0	80,304	4
5 Bourne Mills	100	1,000,000	Feb. 1½	May 1½	Aug. 1½	Nov. 1½	6	6	91,258	5
6 Border City Mfg. Co.	100	1,000,000	Feb. 1	May 1	Aug. 1	Nov. 1	4	4	121,228	6
7 Barnaby Mfg. Co.	100	† 525,000B					0	0	25,424	7
8 Chase Mills	100	1,200,000	Jan. 1½	April 1½	July 1½	Oct. 1½	6	6	116,688	8
9 Charton Mills	100	800,000					0	0	52,992	9
10 Cornell Mills	100	400,000	Jan. 2	April 2	July 2	Oct.2	8	8	45,040	10
11 Conanicut Mills	100	300,000C	Jan. 1	April 1	July 1	Oct. 1	4	6	29,412	11
12 Davis Mills	100	1,250,000	Jan. 1½	April 1½	July 1½	Oct. 1½	6	6	130,368	12
13 Davol Mills	100	500,000	Jan. 1½	April 1½	July 1½	Oct. 1½	6	6	45,264	13
14 Flint Mills	100	1,160,000	Jan. 1½	April 1½	July 1½	Oct. 1½	6	6	107,000	14
15 Granite Mills	100	1,000,000	Feb. 1				1	4½	122,048	15
16 Hargraves Mills	100	800,000					0	0	115,874	16
17 King Philip Mills	100	1,500,000	Jan. 1½	April 1½	July 1½	Oct. 1½	6	6	135,232	17
18 Laurel Lake Mills	100	600,000	Feb. 1½	May 1	Aug. 1		3½	6	60,464	18
19 Lincoln Mfg. Co.	100	1,250,000					0	4½	105,000	19
20 Luther Mfg. Co.	100	525,000	Feb. 1½	May 1½	Aug. 1½	Nov. 1½	6	24½G	52,048	20
21 Merchants Mfg. Co.	100	1,200,000	Feb. 1	May 1	Aug. 1	Nov. 1	4	4	131,496	21
22 Massasoit Mfg. Co.	100	500,000F					6	6		22
23 Mechanics Mills	100	750,000	Jan. 1	April 1	July 1	Nov. 1	4	4	60,496	23
24 Narragansett Mills	100	400,000	Jan. 1	April 1	July 1	Oct. 1	4	4	54,192	24
25 Osborn Mills	100	750,000	Jan. 1½	April 1½	July 1½	Oct. 1½	6	6	70,332	25
26 Parker Mills	100	800,000					0	0	111,684	26
27 Pilgrim Mills	100	† 1,050,000D	Jan. 1½	April 1½	July 1½	Oct. 1½	6	6	53,568	27
28 Pocasset Mfg. Co.	100	1,200,000	Mch. 1½	June 1	Sept. 0	Dec. 0	2½	6	123,010	28
29 Richard Borden Mfg. Co...	100	1,000,000	Jan. 4	April 1½	July 1½	Oct. 1½	8½	6	102,288	29
30 Sagamore Mfg. Co.	100	1,200,000	Feb. 2.	May 2	Aug. 2	Nov. 4	10	10½	150,200	30
31 Seaconnet Mills	100	600,000	Feb. 1	May 1			2	4	68,384	31
32 Shove Mills	100	550,000	Feb. 1¼	May 1¼	Aug. 1¼	Nov. 1	4¾	4	77,728	32
33 Stafford Mills	100	1,000,000	Jan. 1	April 1			2	4	114,584	33
34 Stevens Mfg. Co.	100	700,000	Jan. 1½	April 1½	July 1½	Oct. 1½	6	6	E	34
35 Tecumseh Mills.....	100	750,000	Jan. 1½	April 1½	July 1½	Oct. 1½	6	6	78,960	35
36 Troy C. & W. M'f'y.	500	300,000	Feb. 2	May 2	Aug. 2	Nov. 2	8	8	52,444	36
37 Union Cotton Mfg. Co....	100	1,200,000	Feb. 1½	May 1½	Aug. 1½	Nov. 1½	6	56	110,496	37
38 Wampanoag Mills	100	750,000	Jan. 1	April 1	July 1		3	4	84,760	38
39 Weetamoe Mills	100	500,000	Jan. 1¼	April 1½	July 1		4	6	46,368	39
		$31,060,000							3,129,690	

A—$100,000 Pfd. $200,000 Common. Dividends paid on Pfd. Stock only.
B—$175,000 Pfd. and $350,000 Common.
C—Authorized Capital. Dividends paid on $251,700.
D—$350,000 Pfd., and $700,000 Common. Dividends paid on Pfd. Stock only.
E—Equivalent to 63,000 Print Cloth Spindles.
F—Not included in figuring average dividend.
G—In addition to which a 50% stock dividend was declared.
†—Authorized Capital.

Total dividends paid in 1914	$1,225,793
Total dividends paid in 1913	2,075,452
Decrease for the year	849,659
And an average of 4.13*%.	

Mill Conditions and Market Reviews.

SOUTHERN MILL SITUATION.

Undoubtedly it is true that "what cannot be cured must be endured," as is shown by the tremendous vitality of American commerce and industry in triumphing over the greatest calamity we have ever been called upon to face. There is hardly a commercial or industrial institution in America which has not felt, adversely, the effect of the tragedy of all the ages now being enacted in Europe. However, we are showing some recovery here, and a generally better tone prevails. We are getting used to war and its effects and adjusting ourselves accordingly. The lifting of these war clouds is sufficient to show America that the sun of prosperity, obscured for awhile, has not ceased to shine on this country, and it would seem that those optimists who have steadfastly declared that America will eventually reap greater profits than losses from the European "earthquake" may yet see their declaration proved.

In the present situation it would be better if more people considered the actual facts and kept in mind that whatever our troubles may be, no other country in the world is so well off today as the United States. In many lines of manufacture the impulse given to trade by the demands of Europe has stimulated production. No unfavorable developments followed the partial opening of the Stock Exchange. The adherents of the Cotton Exchange have maintained all along that if the exchange had been in operation the situation since the opening of the present season would have afforded opportunities for speculation which would run prices up to 10 cents, thus sustaining the claim that the exchange is the best friend the southern farmer has.

Our exports have already somewhat recovered from the war, partly owing to the big foreign demand for our food stuffs and materials for war purposes, urgent inquiries for which we have had from the various belligerents. It has even been estimated by some that the war will add $500,000,000 to the foreign commerce of the United States. Germany's entry into the market for exporting, now that contraband conditions are clearer, opens the way for considerable increase as soon as shipping can be engaged. Germany in the past three years averaged 2,522,000 bales of cotton. To take even half that within the next few months would materially lighten the load now being carried by the South.

Resumption of activity in various industries has caused the partial re-employment of a large number of men who a month ago were doing little or nothing. The unemployed class is, therefore, not as much of a problem as it was when the derangement of trade following the European disturbance was at its height. Indications favor better business with the opening of the new year. Underlying conditions are sound, and so long as the country is saved from having to export large quantities of gold—and protective efforts in that direction have worked admirably—the chances are that trade will revive. To this is added the firm belief that the new Congress will not inflict us with any more adverse legislation, but on the contrary, it will be the aim of those in charge of legislation to pursue a really constructive course.

T. I. Hickman, of Augusta, President of the American Cotton Manufacturers' Association, has suggested a means for increasing the demand for cotton goods. His idea is for all railroad trainmen and other uniformed public utilities to wear summer uniforms made of khaki. Khaki is finely adapted to the purpose, and nearly all the heavy goods mills in the South can make this, and if adopted by the railroads, and the others outlined, the business of the mills would be materially increased. Mr. Hickman advanced this suggestion at a meeting of the general managers of a number of railroads recently held in Augusta, and so strongly did the idea appeal to the railroad officials that they gave Mr. Hickman a rising vote of thanks, and in other ways expressed their interest.

On December 10th the North Carolina Manufacturers' Association met at Charlotte, N. C. There were about 50 members of the association present, representing a vast majority of the spindles in the state. The cotton manufacturers in this organization come from North Carolina entirely, and the meetings are featured only by the transaction of business of an internal nature. The more practical affairs of the cotton mill interests are left to the soft and hard yarn spinners organizations that take care of these matters, look after the question of markets, discuss and agree on curtailment, and all such matters.

The North Carolina manufacturers represent a somewhat broader field, and their meetings are featured only by a disucssion of affairs that are comprehensive in scope, such as legislation, traffic, insurance, welfare work, etc. At their meeting on the 10th, after going on record as opposing any further tampering with the labor laws of the state in regard to cotton mill conditions, the convention adjourned without transacting any other business of outside interest or importance. There was considerable discussion upon the question of laws to govern operatives. The association was altogether united in its sentiment that the state needs no further laws. A resolution was finally adopted as an expression of the association's will in the matter, as follows:

"Resolved, that it is the sense of this association that the people employed in the cotton mills of the state are amply protected by the existing laws, and any additional laws would operate against the interests of the employees themselves, and we oppose any change whatever in the present laws affecting hours, age or sex."

Quite a discussion of this resolution followed its reading, and those who addressed the association upon the subject spoke with emphasis and stressed the importance of allowing the cotton mill interests and the employees of these institutions a rest from further agitation in regard to child labor laws or any other legislation that affects the employees. The resolution is intended to express the association's opposition to further agitation for which the child labor organizations have been responsible, the opinion being expressed that as the situation now stands, not only the cotton mill men themselves, but the employees as well, are unwilling to be subjected to further changes.

At a meeting of the Board of Governors of the American Cotton Manufacturers' Association held recently in

Augusta, Ga., Memphis, Tenn., was decided upon as the site of the 1915 convention, which will be held some time in April.

It is reported that J. W. Kyker, of Newport, Tenn., will erect a building and install necessary equipment to knit hosiery.

The Defiance Sock Mill, owned by Morehead Jones and Kenneth Tanner, of Charlotte, has been established in the building of the Charlotte Trousers Co., for the manufacture of half hose for men.

At Sylacauga, Alabama, the Marble City Mills are installing new roving frames and winders in the addition to the plant which has just been completed. A sprinkler system and a humidifying system are also being installed, and a new warehouse is to be built. They will manufacture a finer grade of yarns, from double roving.

The Gainesville Hosiery Mills has been organized at Gainesville, Ga., with A. C. Meldrum, Prest., and J. H. Reynolds, Treas., for the manufacture of hosiery.

Chas. Colcord and S. A. Horton, of Oklahoma City, are promoting a plan for the establishment of a cotton mill at that point. They propose a capitalization of $500,000 and will accept cotton in exchange for stock.

The Robinson Mfg. Co., of Charlotte, N. C., has been organized, with capital stock of $100,000. They have taken over the old plant of the Charlotte Cordage Co., and this building will be equipped with 3,500 spindles and preparatory machinery, to manufacture 14's to 20's hosiery yarns. They plan to later add sufficient machinery to bring this up to 8,000 spindles, as the building will accommodate that amount of machinery. The incorporators are W. L. and W. E. Graham Robinson and W. A. Watson.

The Williamson (S. C.) Mills are planning to install 750 new automatic looms to replace old plain looms, contract having been placed for this new machinery.

B. F. Johnson, Secretary of the Chamber of Commerce at Gainesville, Tex., is endeavoring to interest capital in a local cotton mill project.

At Memphis, Tenn., Thos. R. Winfield, President of the Business Men's Club there, is interested in organizing a company to build a cotton mill. He proposes a $500,000 concern.

The Denison Cotton Mill, at Denison, Texas, is planning to install new machinery to replace old machinery.

The Aurora Cotton Mills, Burlington, N. C., will install 600 automatic looms to replace old equipment.

The Bibb Mfg. Co., Macon, Georgia, have just placed an order for considerable new machinery, including a large number of new roving frames.

Order has been placed by the Quitman Mfg. Co., Quitman, Georgia, for additional machinery.

The Kincaid Mfg. Co., Griffin, Georgia, have placed an order for new machinery.

The Ardmore (Okla.) Chamber of Commerce is trying to interest parties in the establishment of a spinning, or knitting mill at Ardmore. Felix K. West is offering inducements, it is said, to manufacturers who will locate a mill there.

The Taylorsville (N. C.) Cotton Mills are installing the new machinery which they recently bought.

The Regina Hosiery Mfg. Co., Haw River, N. C., has received a large order for hose, to be shipped to England.

Practically all of the mills in the neighborhood of Greenville, S. C., are reported as running on full time, many of them having foreign orders, for blankets, shirting and sheeting.

E. A. Orchard, of Austin, Texas, and his associates are planning the organization of a cotton mill at that place.

Another new industry for Chattanooga has been successfully promoted and financed, and will be in operation by January 15. This is the Nick-a-jack Hosiery Mill, formed by Chattanooga men and capital. The authorized capital stock of the new company is $30,000. Those who signed the application for a charter are W. C. Kyle, Charles R. Hyde, T. Walter Fred, John H. Hyde and W. Shep Shelton. Mr. Kyle is president, Charles R. Hyde vice-president, and Mr. Fred, secretary-treasurer. The company will manufacture a high grade of men's silk half-hose, and will be the only factory in the city devoted exclusively to silk products. Ten Scott & Williams knitting machines and two Wildman ribbers will be the initial equipment, but another equal installation of machines will be made soon as the industry prospers. Mr. Kyle was formerly superintendent of the Chattanooga Knitting Mills. Oswald Rothe, who will have charge of the dyeing department, has had charge of the chemical laboratories of several textile mills around Chattanooga.

NEW ENGLAND MILL SITUATION.

New England cotton manufacturers will have few regrets at the passing of 1914. It has been one of the most difficult years ever experienced, and while the end of the trial is not yet in sight it is now thought that the worst is over, and that things will soon be on the mend. The readjustment of cloth prices to the new low basis of cotton has been interfered with by the dyestuffs difficulty, and it is already apparent that the mills will have to contend for several months yet with a reduced purchasing power among the masses of the people of the country.

The swing of prices downward has been most marked during the past month because quotations on branded cottons widely known throughout the country have been greatly reduced and the news has been carried into every retail store in the land. Ultimately the very low basis on which buyers may now purchase the better qualities of cotton goods must stimulate their distribution. In fact the size of the business already done with jobbing trade on some standard lines of bleached goods, printed goods, and other cloths, promises to keep the looms employed fairly well for the first two months of the year.

There has been and still is a very material curtailment of the output of cotton products in New England, estimates running from 20 to 25 per cent, but in spite of this there are accumulations of various goods in mill hands. Stocks of print cloths at Fall River, for example, are nearly twice as large as they were a year ago, yet Fall River mills have not been running more than 80 per cent of their looms for some time. With cotton on a low basis there is not so much risk taken in accumulating goods as there has been, nevertheless, manufacturers who are working under the highest wage scale of the decade find little comfort in making what they cannot sell steadily.

It is known that some business has come to the mills of New England as a consequence of the war in Europe, but it has been very trivial in comparison with the business lost on account of the war. The mills that make very thin

goods for hospital bandages, and some that make napped goods suitable for shirts, have secured some orders, and it is also true that some mills making wide sheetings and pillow tubings have sold some goods that have gone to Europe. There has been some business done in duck, and some of the underwear and hosiery mills have secured foreign business not possible to them until the war began. All of these things would readily be passed if the ante-war conditions could be restored.

The reductions made on finished goods were not so drastic as those that have taken place in gray cloths in the past few months. The price of 4-4 Fruit of the Loom was dropped from 9¼ to 7½ cents and then advanced to 7⅝ cents. Pepperrel wide sheetings were dropped from 24 to 22 cents, basis 10-4, and then advanced 2½ per cent. The prices on percale were dropped about 12½ per cent, while standard prints were dropped from 5¼ to 4½ cents. The jobbers have generally ordered in fair quantities on several of these lines but the trading has not been of a normal character for various reasons.

Only stock goods were sold by the manufacturers of Fruits, and several lines of prints and percales. This was due to the very low prices quoted in relation to producing cost, as well as to the fact that in many print works it has been found impossible to use substitute dyes for the patented colors they were accustomed to use for years past. On indigoes, for example, the largest printers were forced to restrict buyers to 25 per cent of their requirements, and on some other colors, like pinks, clarets, and reds, a still smaller percentage of orders was accepted.

The leading manufacturers of fine dress ginghams sent out notices to the trade during the month that no change in prices would be made by them for spring deliveries. This action was taken because dyestuffs are scarce and because many goods have been sold for delivery up to the spring selling season at retail. No action was taken on staple ginghams or on some of the leading staple tickings.

The buyers of the country are beginning to take a more serious view of the dyestuffs scarcity now that they are being restricted in their selections of colors in various lines. Unless something occurs, between now and the middle of next month, by which dyestuff supplies will be increased, it is certain that many gingham looms will be shut down. One of the leading lines of shirting chambrays has been withdrawn from sale owing to the impossibility of getting indanthrene dyes of the certain grades desired. When the time comes for the naming of prices on fall ginghams it is stated by some of the leading mill agents that sharp advances will be asked for dark colors. If the buyers cannot pay the price, mills will be quite as well pleased as they can then extend the time on which they can turn out light colors.

During the past year the sales of flannellettes were helped greatly by the demand from tobacco and cigarette manufacturers for cloths on which certain designs were printed to be used as premiums. This business fell off toward the year end. In one or two instances the mills that make this class of merchandise were helped by the demand for shirtings and shirts to be shipped abroad for army and hospital use. The naming of prices on wide flannellettes was followed by a generous amount of business given to a few mills. It has been learned that certain standard cloths were taken by cutters because of the relatively low prices at which they were offered. The low price of cotton helped the higher cost grades but it injured the many low grades that were sold freely a year ago.

Mills engaged on fine and fancy cottons, particularly many in New Bedford have run into another trying time due to the hesitation of buyers in placing repeat orders for spring. In order to secure business on which looms could be kept running it was found necessary in many instances during the month to cut prices to a basis of little or no profit. In many cases mills were forced to choose between prices that showed no real manufacturing profit but might perhaps spare a loss by keeping organizations intact.

When the war broke out and it seemed as if fine goods would be scarce for spring as imports were likely to be cut off and dyestuff scarcity was clearly seen. The finishers sent notices to their customers of the pending dyestuff troubles and many substantial quantities of fine cottons were sent in to be finished. These goods have not yet been sold. It also appears now that importations of fine and fancy cottons have not declined any, but are actually increasing. The fancy French and Belgian cottons, and many of the German cottons are not coming in, but cottons from Great Britain are coming in so fast that the figures of October indicate a very full supply from abroad.

At this time it is estimated that between 75 and 80 per cent of the New Bedford looms are in operation. There is some hope that when the retail selling season begins there will be a fuller list of orders from the trade, but at this writing the repeat business is about as disappointing as can be imagined. Fine printed goods are being sold better than white goods, and piece dyes are selling in a smaller relative volume than for many years. There is a better business on cotton and silk fancies than on many of the high grade all cotton fancies. The demand for sheer goods continues in excess of the demand for the heavier qualities and the spinning of fine numbers still continues prominent in some large mills.

Business in the bleacheries has shown some improvement since prices were named on jobbing styles of bleached cottons. There is still a great deal to be desired before any of the leading bleacheries are really busy. The largest finishing works are about 60 to 70 per cent employed and then only on small orders. It is very difficult for finishers or job printers to build up a sold to arrive list on which hopes of future employment can be predicted. The lace factories have been less active than for many months, in fact in some cases there has never been such a dearth of business offered to American lace mills as at the present.

There is not much incentive for new investment in cotton mill enterprises and it is needless to add that the machinery concerns are not broadly active. In fact some of them have been running about as closely of late as they have been in three years or more. Some of them are busy the largest enterprise in hand being the one of supplying machinery for the Naumkeag Mill which is being rebuilt at Salem, Mass. Some few mills are adding new machinery in a small way and are being attracted by the very low prices machinery men offer for certain kinds of work. Once the year is turned and the financial situation grows clearer, as it has been doing, there is reason to look forward to a fair trade in cotton machinery to begin perhaps in the early spring.

The one strong basis of hope entertained by most New England manufacturers at the present time is that after

the new banking act gets into working order there will be a slow and steady expansion of export trade. Cheap cotton has always helped the cotton mills in the volume of business offered at least, and there are manufacturers who believe that the time is at hand when the very low prices of goods will stimulate purchases, to the exclusion of purchases of other more costly cloths, such as silks, and worsted dress goods.

COTTON COMMENT.

BY H. AND B. BEER, NEW ORLEANS.

New Orleans, December 19th, 1914.

The recovery in values from the low price reached, as a result of the large crop estimate by the government on December 10th, which indicated a yield, including linters of about 16,262,000 bales, is due to an urgent export demand. Compared with one month ago, when 63 steamers were booked at Galveston, the number now booked for December and January sailings is 73. During the past week exports to Europe were larger than the corresponding period for the first time this season—300,000 vs. 276,000, making the total since August 1st 2,040,000 against 4,853,000. Indications are that the foreign demand will continue brisk for some weeks to come, if not for the remainder of the season, as there is no doubt that European spinners would buy the entire crop if sufficient tonnage was available for transportation purposes owing to the price being about $15 per bale lower than cotton can be grown.

American spinners should take advantage of the present opportunity to provide for future wants at the current low levels, but they seem to be slow in doing so, as their stocks on November 30th were about 366,000 bales less than they were on the same date one year ago, 1,061,000 vs. 1,427,000.

Consumption in the United States for the month of November was 241,000 bales compared with 456,000 for the corresponding month last year, and the total thus far this season, or from August 1 to November 30, was 1,672,000 bales against 1,843,000. The quantity of this crop marketed to December 18th was 6,736,000 bales vs. 9,454,000 one year ago, showing how firmly the interior is holding for higher prices. By January 1st the South will have marketed about one half of this year's large crop, which will make it easier to hold the other half for higher prices.

With the opening of the new year we look for a gradually advancing market and much higher prices eventually. Therefore, the American mills should take advantage of the present opportunity to stock up with all the raw material they can possibly carry, as the price has probably seen its lowest level for the season, perhaps for many years to come. Europe is aware of this probability and is acting accordingly.

Never before in the history of the staple has there been a more thorough canvass of the cotton belt in the interest of educating farmers of the necessity to make a big reduction in the cotton acreage next spring, and the campaign is bearing fruit already. The wheat acreage in the South, the earliest and smallest crop in the South, has been increased about 6 per cent, or about 2,000,000 acres. A big increase in the oat acreage is now being planted, and a larger increase in corn will be sowed in the spring.

Large shipments of mules and horses are being made to Europe for use in the European war by France and England, New Orleans alone expecting to ship 100,000 head, and every important port on the Gulf and Atlantic coast is sharing in the business. This is another feature that will tend to reduce the acreage, as will be the indisposition of merchants and bankers in the South to advance funds for making more than a half crop of cotton next year.

We believe that the United States is on the eve of experiencing a long period of great prosperity, which will probably be slow in developing, but become more in evidence as we enter the new year.

The loss to the South of about $500,000,000 as result of low prices for cotton, has been offset by a correspnding increase in the value of the grain crops of the West, and as the total value of farm products is about $9,000,000 for the whole country, America is in a fortunate position after all. The decision of the Interstate Commerce Commission granting a 5 per cent increase in freight rates is a move in the right direction, as it will permit railroads to make betterments and extensions.

THE YARN MARKET.

The yarn market for the past month has been comparatively dull and what business there was transacted was largely confined to small sales. Naturally, the holiday season and the annual stock taking, which in many concerns occurs around the new year, affected conditions and the buying was as little as possible. The month opened with unusually slow business in the Philadelphia market and many complaints of poor collections were going the rounds. The cancellation evil was still one of the subjects frequently discussed and it seems that the outcome of this difficulty will be eventually the formation of a yarn dealers association to assist in overcoming the effects of this cancellation habit.

The middle of the month found very little improvement in demand. Sales of 50's 2-ply combed lisle were made at 36 to 38 cents; 60's 2-ply sold for 44 to 45½ cents. 60's 2-ply combed sea-island warps sold during this same period for 64 and 64½ cents. The demand for single combed peeler on cones was better than in the case with 2-ply, but is still far below normal. Southern frame spun combed peeler on cones sold during this period on the basis of 19, 19½ and 20 cents for 10's. There was little improvement in the weaving line and from some quarters reports were not so favorable.

The closing of the month found conditions very quiet as already indicated because of the holiday season. There is some increased demand for mercerized yarn and the weaving lines show prospects of improvement in spots. A few large lots of weaving yarn were sold and there are reports of inquiries for other large quantities. It is very probable that after the first of the year is safely past, business will begin to improve somewhat and as the inquiries improve the prices are bound to stiffen. The following are recent quotations in the Philadelphia market:

Southern Single Skeins.

4s to 8s	12 @12½	20s	14½ @15
10s	13	24s	15½ @16
12s	13½	26s	16 @16½
14s	13½ @14½	30s	17
16s	14 @15		

Southern Two-Ply Skeins.

8s	13	24s	15½
10s	13	26s	16
12s	13	30s	17
14s	13 @13½	40s	21½ @23
16s	13½ @14	50s	31 @32
20s	14½ @15	60s	35

Carpet and Upholstery Yarns in Skeins.

9-4 slack	14½	8-3-4 hard twist	12½ @13
8-4 slack	14½		

Southern Single Warps.

8s	12½ @13	24s	16
10s	12¾ @13¼	26s	16½
12s	13 @13½	30s	16½ @17
14s	13½ @14	40s	22
16s	14 @14½	50s	31 @32
20s	14 @15		

Southern Two-Ply Warps.

8s	13	24s	16
10s	13½	26s	11½
12s	14	30s	17
14s	14½ @15	40s	22 @22½
16s	15	50s	32
20s	14½ @15		

Northern Two-Ply Carded Peeler Skeins.

22s	16½	36s	21½ @22
24s	17	40s	24
26s	17½	50s	32
30s	18 @18½	60s	36 @37

Two-Ply Combed Peeler Skeins.

20s	23 @23½	50s	37 @38
24s	25	60s	42 @44
30s	28 @28½	70s	50 @52
40s	33 @33½	80s	60 @63

Southern Frame Spun Yarn on Cones.

8s	13½ @14	20s	16½
10s	14 @15	22s	17
12s	14½ @15½	24s	17 @17½
14s	15 @16	26s	18 @18½
16s	15½ @16½	30s	18½ @19
18s	16 @16½		

Northern Mule Spun Carded Yarn on Cones.

4s to 8s	15½	20s	18 @18½
10s	15½ @16	22s	18½ @19
12s	16 @16½	24s	19 @19½
14s	16½ @17	26s	19½ @20
16s	17 @17½	30s	20½
18s	17½ @18	40s	23

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	20½ @21	22s	24 @24½
12s	21 @21½	24s	25 @25½
14s	21½ @22	26s	26 @26½
16s	22 @22½	30s	29½ @31
18s	22½ @23	36s	32 @33
20s	23½ @24	40s	34 @35

THE KNIT GOODS MARKET.

From the standpoint of the knit goods manufacturer, the best feature of the knit goods market is the comparative scarcity of stock in the hands of jobbers. Some few buyers have been in the market looking over the samples for next year but they have shown little enthusiasm. There is yet quite a number of duplicate orders expected for next spring that have not so far materialized. Buyers continue to urge lower prices on spring goods and it is reported that in some quarters they are succeeding in securing these reductions to a limited extent.

The foreign buying seems to be the bright spot in the midst of a great deal of depressing conditions, but this buying does not affect the whole market. It has so far affected only certain lines. The greater number of knitters in the Philadelphia section are not being benefitted by these so-called "war orders" while on the other hand, the manufacturers of ribbed goods and particularly those of the fleece lined variety, are having more orders offered them than they are able to take. Many of these mills are running on a night and day schedule and are still unable to keep up with the orders sent in. Many orders are also being received from the same quarter for heavy hosiery in both wool and cotton.

While the present conditions seem particularly dull because of the holiday season delaying to a certain extent business of all kinds, the outlook for an improved demand is believed to be favorable. The dye-stuff stringency is still an active factor, particularly in the hosiery end and just as soon as the jobbers become thoroughly convinced that this stringency does exist, there will doubtless be a more rapid placing of contracts than has been the case for some time past.

Effect of High Temperatures and of Steaming on the Affinity of Cotton for Dyes.

The affinity of cotton for dyes in printing, and especially in dyeing processes, is sensibly lessened by the action of a high temperature, that action being the greater the higher the temperature, and the longer the time during which the cotton is subjected to it.

Steaming, especially under pressure, lessens the affinity of cotton for dyes more than heat does.

This change in affinity is more pronounced with mercerized than with unmercerized cotton. If mercerized cotton is steamed for five minutes at a pressure of one atmosphere, and then dyed with a direct cotton color, it will take a very pale tint only, while another portion of cotton from the same hank, dyed in the same way, and with the same percentage of dye, but without steaming, will be deeply colored. It is a remarkable fact that if the cotton is steamed when wet, this change of affinity is almost absent. Even after some hours of steaming, the difference in affinity is but small.

On steaming a sample of grey goods and subjecting it to bleaching and mercerization, together with an unsteamed specimen of the same article, the difference will again be less.

On remercerizing a mercerized cotton after steaming, the difference will again be less, and will be about the same as if the cotton had never been mercerized at all.

The presence of glycerine or glucose does not lessen the affinity of cotton for dyes, a fact which may be taken advantage of in getting dark effects on a light background by printing with the thickened glycerine, steaming for five minutes at one atmosphere, and printing immediately.

It seems, therefore, that high temperatures as well as steaming alter the properties of the cotton in a direction opposite to that in which mercerization affects them. Not only so, but high temperatures and steaming bring down the affinity of mercerized cotton for dyes to as low a point as the affinity of unmercerized cotton. It would be interesting to know if the effect of mercerization can be entirely destroyed by further steaming or heating, so that the final affinity of the cotton is the same whether it was mercerized or not before steaming or heating.—M. Camille Faure before the Societe Industrielle de Mulhouse.

An agent and dealer in textile fabrics in northern Europe advises an American consular officer that he wishes to form connections with firms in the United States which are in position to furnish cotton goods of all kinds, especially colored cottons and twill for making overalls and other workmen's clothing, moleskins, velvets, silk, and silk ribbons. Correspondence should be in Norwegian or German language. Metric units should be used, and prices should be quoted c. i. f. or f. o. b. an Atlantic port. For further information apply to the Bureau of Foreign and Domestic Commerce and refer to file No. 14370.

COTTON MANUFACTURING.

THE CARDING PROCESS.

BY H. C. WOOD.

PART TWO.

THE FEEDING MECHANISM

The feeding mechanism is composed of the feed plate, the feed roll, the licker-in and the parts used with the licker-in to clean the stock. These various parts will be described under one head as they are closely related and cannot be described without speaking of the other.

The ordinary method of feeding the lap is by means of the "dish" or "shell" feed. This is shown in Figures 2, 3, and 4. It consists of a polished plate curved at its inner end to correspond with the outline of the feed roll. The lap passes between the feed roll and feed plate and is carried in to be acted upon by the teeth of the licker-in.

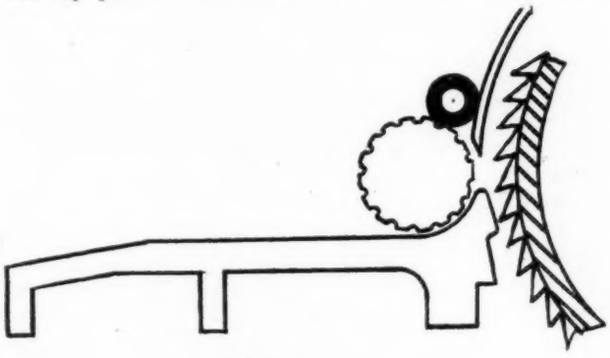


FIG. 2.

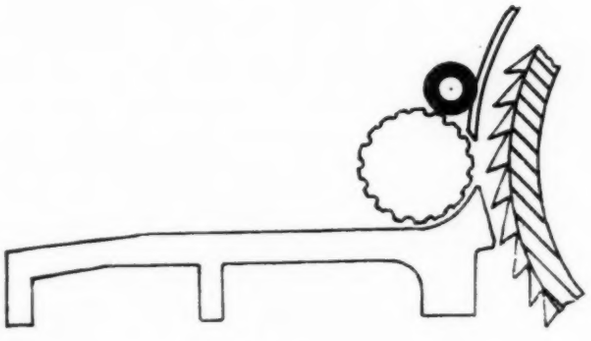


FIG. 3.

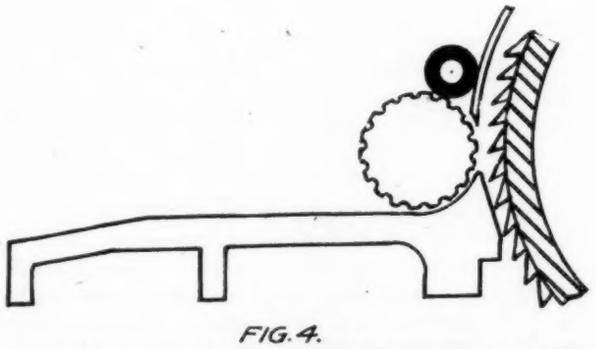


FIG. 4.

FIGS. 2, 3 AND 4. DETAILS OF THE DISH OR SHELL FEED.

Sufficient pressure is applied to the feed roll to cause the lap to be fed evenly and regularly. The feed roll is turned at a certain speed depending upon certain conditions, but this speed is constant under the conditions. By means of this regular speed and the pressure applied the lap is fed evenly. If the pressure be only slightly removed or lessened it would cause the lap to be pulled from under the feed rolls in small tufts or bunches, which is most undesirable. Owing to the delicacy of the wire covered surfaces of the card and the thoroughness of the cleaning desired, it is necessary that the licker-in remove as near individual fibres as possible.

The dish or shell feed is of great assistance in this action for it presents the fibre to the action of the licker-in much earlier than is possible if a pair of feed rolls were used. It is desirable that only those fibers be removed which are not held by the feed rolls and dish feed plate. By examining Figures 2, 3, and 4, it can readily be seen that the "nip" of the feed roll and plate extends to the nose of the plate and only until the fibre passes the nose of the plate, is it free. Now, owing to the position of the feed plate and its operation, the teeth of the licker-in have been acting upon the fibre for a considerable time previous to the actual time the fibre is released. This action causes the end of the lap to be combed out and the fibres to be straightened to such an extent as to make the actual removal much easier. The shape of the licker-in teeth and the method of setting them in the licker-in drum is such that they are always clear and in the best condition for the work they perform.

The action of the leader is very interesting and important, for when working properly, it greatly reduces the work thrown on the cylinder and flats. I have spoken of the fibres being removed individually. This is not literally true as the fibres are removed collectively from the full width of the lap and this removal never ceases as long as the feed roll turns and there is a lap to feed. The licker-in teeth are wound on the drum spirally and in turning no part of the end of the lap escapes their action.

Different lengths of staple require different styles of feed plates in order to get full advantage of the dish feed. In working short stapled cottons the lip of the feed plate must be made short and of a slightly different shape than would be used for longer stapled varieties. By examining Figures 2, 3, and 4 once more it can be seen that the setting of the feed plate to the licker-in occurs at the lower end of the lip. This is true in all three styles. And this is the point of removal of the fibres from the end of the lap. In order that the fibres may be removed as soon as released by the feed roll and plate it follows that the lip must be designed for the length of staple being run.

To get the full benefit from the dish feed it must be properly set or adjusted to the licker-in. If set too closely the fibre is very liable to be too harshly treated and in some cases even cut. Close observation of this one point will more than repay one for the effort.

I have spoken of the combing or straightening action

of the licker-in, but there is another operation performed, namely a cleaning action on the fibres.

The leader passes through the lap at such a high speed that motes, sand and leaf dirt are struck down and drop to the floor. Assisting the leader in this action are the mote knives which are placed almost directly under the lip of the dish feed. Modern cards are usually fitted with two mote knives, although there are many running with only one. The mote knives act as scrapers over which the fibres are drawn by the licker-in. Their action causes the fibre to drop motes, sand or very short fibres that have been removed with them from the lap. By the adjustment of the mote knives their action may be lessened or made more acute. They may be adjusted in three different ways; *viz.*—vertically, horizontally, and for angle. The vertical and horizontal adjustment bring the knives into position as regards the licker-in. The angular adjustment is one to which too many pay too little attention. I have always found it to advantage to carefully see this adjustment properly made. For this purpose I have a small angle gauge similar to that used on combers. While this gauge does not tell the angle of the knives I have marked it off into divisions and numbered them. With this gauge all cards can be adjusted alike. I have shown a sketch of the gauge at Fig. 5 and most any one can make a pattern in a short time. In using this gauge the angular adjustment of the knives should be made first before the knives are set to the licker-in. This brings the knives in action at a point the same distance below the center of the licker-in in all cases. To show the effect of this in an extreme case the knives might be placed well down under the licker-in at a certain angle, inclined toward the licker-in. Their action at this point would be much less than would be the case if the same angle was maintained and the knives were elevated. Perhaps some readers of COTTON may think that such details are unnecessary. I have been accused of splitting hairs before, but I was requested to write these articles on the card telling my own personal experiences and I give them for what they are worth.

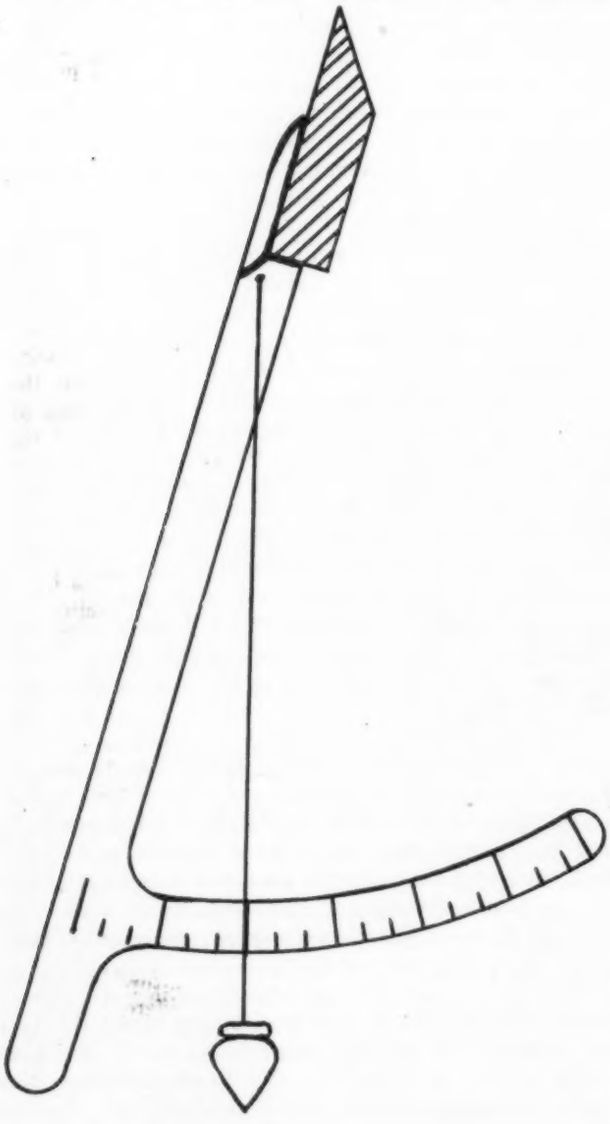


FIG. 5. AN ANGLE GAUGE FOR SETTING MOTE KNIVES.

Not all makes of cards have facilities for making a vertical or angular adjustment of the knives. Again some makes of cards have both knives carried in one plate and both must be set at once. Other makes of cards have an individual horizontal adjustment for each knife only. On cards having no vertical or angular adjustments for the knives, the makers have determined upon the proper angle and height of the knives by experiment. And different combinations of angle and height will be found on different cards. This is the reason, I believe, why, on different makes of cards, it is almost impossible to obtain the same percentage of licker-in fly from each make with the same adjustments.

Where two knives are used I have often found one knife not working. I found this was due to the fact that both knives were set at the same time. Where it was possible to avoid losing the action of one knife, I had all adjustments—vertical, angular and horizontal—made on the botton mote knife with the top knife out. Then the top knife is set entirely by the vertical adjustment. This meant more work for the grinder but the improvement in the work was remarkable. I have always made it a point to throw all the work possible on the preceding machine. I have often heard the card blamed for work the pickers should have done and combers blamed for work the card should have done. I have also heard the flats and their setting blamed for not taking out motes and trash that should have been removed by the mote knives.

To illustrate the action of the mote knife in a simple way, take a jackknife blade and hold the blade horizontal. Next draw your finger down over the cutting edge of the blade. It does not cut, but simply scrapes your finger. Now turn the blade up slightly and if your finger is again drawn over the edge, the scraping action is found to be more acute. The more you elevate the cutting edge toward a vertical position the harsher the scraping becomes until you actually cut your finger. Now the same idea holds true in the angular adjustment of the mote knives. The more acute the angle at which the knives are brought into action on the fibres the more waste will be removed.

To keep the licker-in working at its greatest efficieney the clothing should be kept sharp and the points straight in alignment. A soft clay brick has usually been the instrument for sharpening a dull licker-in. Lately, however, a machine has been brought out for grinding the licker-in. This machine carries a traversing emery grinding wheel

for sharpening the wire. It also carries a specially designed tool which straightens and aligns the wire. This machine does very efficient work and should fill a long felt want. It is shown at Fig. 6.

In action this machine is quite simple. It consists of two stands A in which the licker-in is placed. In repairing and grinding the licker-in the side shields are allowed to remain on the licker-in so that the grinding and truing are done with the licker-in carried in the working bearings.

The first operation is that of straightening and aligning the wire teeth. For this purpose a small tool C is used called a plough. This is a special tool of hardened steel made to suit the pitch of the wire clothing. It is adjustable in two ways; *viz.*—vertically by the screw D and horizontally by the screw E. The plough should be carefully lowered into the wire and given a half-dozen runs across the leader, gradually working the jammed

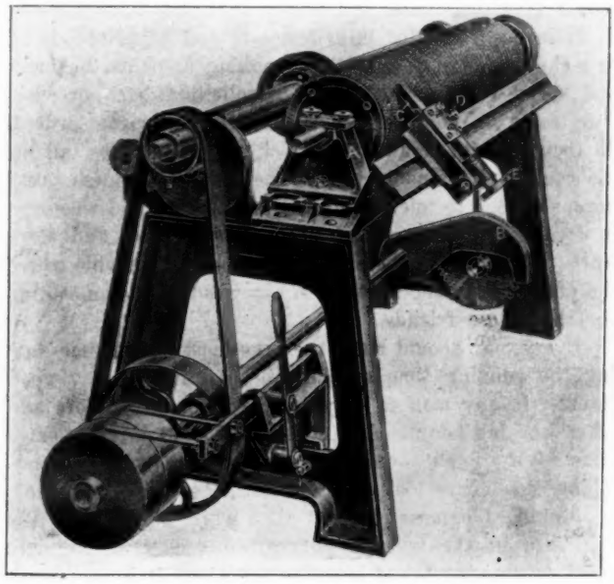


FIG. 6. A LICKER-IN GRINDING MACHINE.

teeth back into position. The licker-in must be turned so that the plough acts with the teeth and not against them.

After this operation is completed the teeth are ready for grinding. This latter operation is carried out by means of a traversing wheel covered with emery fillet. The setting of this wheel is done by means of a worm and worm gear that carries both bearings of the wheel in or out together. These bearings are all aligned with the licker-in bearings and therefore will grind the licker-in true. By this arrangement a licker-in large at one end can be ground down and the surface made perfectly level and true. In setting the grinding wheel care should be taken to let the wheel make a complete traverse before lowering it. Also grind down the high places before setting the wheel to touch all points. This machine very successfully does the work for which it is designed.

(The author hereby acknowledges his indebtedness to C. E. Riley and Co., of Boston for the illustration of this machine).

(To be continued.)

Don't be afraid to go out of the way to do a good turn for a friend.

Don't obstruct fire doors.

DON'T HAMPER YOUR EXPERTS.

BY "HIGHER EFFICIENCY."

There is much difference in the manner in which experts make use of their time, and this difference amounts to a great deal for or against the advantage of the man and the plant.

An expert is a high-class man who usually appreciates the value of time-efficiency for himself as well as for those under his direction.

There are only sixty minutes in an hour. No expert can stretch them, but some do shorten them to a considerable extent. This statement not only applies to the expert's personal time, but to all who may come under his immediate control.

There are many men who are not classed as experts because they are not permitted to spend their time as they see fit for the best interest of their employers. They are not "fetching the results" as their boss probably puts it, and so both the would-be expert and the plant run short to their mutual disadvantage. To bring the thoughts to a focus so the idea may be correctly grasped, we will give actual examples from life—pictures as seen by the outside expert.

As is generally known, there are some overseers who, if given the liberty, or wisely directed to spend their time to the best advantage, would be securing much better results. Instead of being thus directed they are required to make out long daily reports, size the yarn, make out sample pieces of yarn or cloth, keep the time of their operatives, make piece work tickets, and do their own general bookkeeping. All such routine work takes up most of their time and prevents them from being more observing in the general operation of the room as well of in training their help. It also stands in the way of the "pound of prevention" which could many times be applied. The accidents occurring in their respective departments on account of this method of operation, cost much more than the apparent saving.

In a department managed by a man with "tied-hands," so to speak, it may be noticed that the machine shop bill for repairs run high. This is because things are neglected in general. There is no interested person to observe if the oiling is done right, and if the belts are properly looked after. Machinery is wearing out because belts are too tight and oiling improperly done. There may be frequent fires. Production is less because belts are too slack, or because there is too much loafing around generally. If such an overseer had a good clerk to do his figuring the time he could and would spend in preventing other losses would pay for a dozen clerks.

It is the same way with some superintendents. There are superintendents who are required to check up and average a whole system of daily reports and perhaps do the shipping for the mill. Others are sometimes even required to do their own packing, marking and nailing cases, weigh cotton, help get cotton in, make out warper tickets, size the yarn, run a room, run the office and "what not"! No superintendent can do either himself or his mill justice who wastes his and the company's time in this way. In such places responsible men are not required because they are not supervising at all. It is all "bluff." It would be cheaper to hire high-school boys to replace them. They could do the work just as well.

The worst is not yet told for some worthy overseers and superintendents are dropped as incompetent and branded as failures, when the truth is that they have not been working at their trade at all, and most of them, with their hands untied, could have entered the expert class with credit to themselves and to the management.

All this should be changed. The general manager should see to it that his right hand men are not hampered by small or insignificant duties which could be as well done by cheaper labor. One of the most successful mill treasurers has said: "I'd rather go through my plant and see my superintendent and overseers sitting around watching the processes and workers than to see them figuring out tangles at their various desks, and then find that the mill was loss-crazed. Where men have time and improve this time by being onto their jobs, there will be less repairs, less departmental fires, less petty and aggregate losses, also less dissentions among the help and a decidedly higher efficiency all around."

It is not our intention to divorce the responsible man from the book-record knowledge of his work. It is important that his record be placed in figures before him, so that he can see the results of his efforts and whether they are gains or losses. But this can be accomplished without holding him down to details.

A great deal of time could also be improved if the aimless trip was dispensed with. Simply wandering around a plant, lounging here and there, is merely a time-killing device. This method is also as fruitless as the tied-hands style of managing. A tour of inspection should be a tour of inspection. The note book can aid the methodical man to cover a beat skillfully without forgetting and being obliged to retrace so many footsteps.

The overseer's visit to the superintendent should not be a wondering nor a wandering trip. He should have his pathway well beaten and know what he is to present for consideration; also he should have plenty of information to cover the subject. He should cover his subject so well that he will not be obliged to go back over it for a "finish," or to start a lot of new ideas not yet sufficiently ripened for ready explanations and fruitful tests. He should then go back to his work and see how well he can spend his time before seeking another interview.

Some plants are interview mad. There was a superintendent who made a practice of having an overseer come into his office every morning and talk to him for several hours at a stretch. His men were often changed as failures, and yet they were experts in their previous positions. He did not give them time to work. Making the most of time is one of the greatest assets a man can have, and should be cultivated by the man who strives to succeed in his work. It does not pay to have experts do work that may be done equally as well by persons obtainable at from ten to fifteen cents an hour.

What some mills need nowadays are more *man* and more work done for the same pay, instead of more men, which means less individual work and more pay. It is a fact that some mills have too many men and too little work done per man, thus needlessly wasting money. There is just as much danger of having a mill over-officialed, over-managed, and under-worked, as there is of having the same mill under-bossed, short-sightedly managed and over-worked.

What is required today is a careful balancing of all these forces and conditions to meet modern demands. Competition is now great, hours of labor short and profits small. These conditions will permit the carrying of neither dead wood nor drifting material. Both are bad for the mill, the man, the work and the profits. Why not call a halt on these two extremes, viz. too much help and too little work, or insufficient help and the force overworked. The two extremes are still in force here and there to the injury of all concerned.

In many mills it would pay well to add one or a few more good hard-working organizers, but this condition is more excusable than where the force is top-heavy and under-employed. There is nothing more deplorable than a lot of mill officials feathering their own nests, or feathering the nests of others at the company's expense. Present day conditions *demand* that the responsible force, in all degrees of authority, put *all* their time into the task they are paid for. This should be just as much expected of them, as it is in turn expected by them that their help should give their time.

It is not right for mill overseers and superintendents to make up their grocery lists, banking accounts, business and social correspondence, lodge soliciting, etc., or visit from room to room, telephone out all their private orders, do their private errands, and look for better jobs, all on the company's valuable time. There is no business prosperous enough to tolerate all this loss of time and wherever it does exist, there is vast need of *more man* and *more work*. This business becomes all the more intolerable where the official force condescends to carry out the same routine for their close friends.

Every man should make the very most of his time during the running time of the mill and it will pay good interest to any man to do some hard thinking before and after working hours. Also it is well to put in some extra time in the plant outside of the regular working time. Things sometimes look different with the wheels stopped.

Making the most of one's time while on the job is a big item in the management of any plant. Downright good supervising talent is a fine art where it is conscientiously cultivated. Few men are born that way. It is largely an acquired faculty which depends upon good training. There is a vast difference in supervisors. Some are always in trouble and the work always ahead of them, pulling the man along. Others seem to be moving along smoothly, apparently carrying a magic wand. They are way ahead of their tasks and are pulling the work along. Supervisors of this type are called constructive, progressive men. They are the men who carry the load across the bridge and deliver the goods right, and on time. It makes a vast difference as to whether the work is pushing the man, or the man pushing the work.

The man who starts out on his supervising beat with an optimistic spirit, a big heart and a magnetic temperament will impart energy to his help and inspire them to do their best. He will lead instead of follow them. This bond between supervisor and the supervised forms a confidence which produces results. This kind of a man will prevent the waste of time, stock, and supplies, and have plenty of reserve force to carry him over the difficulties as they come up from day to day.

The trend of the times demands all the thought and energy that men can collectively concentrate on their work. This cooperation should characterize the movements of all from the directors down, and from the head-doffers up. The rank and file will govern themselves accordingly and

very much in proportion to the manner of their guiding and governing associates. Absolute loyalty of purpose must govern the coming man and his work. Give a closer application to service and the cost will go down.

Don't hamper your experts, but help them by co-operating with them at all times.

KNITTING DEPARTMENT.

ANNOUNCEMENT.

In an early issue of COTTON, Dr. Davis will begin a series of articles on The Manufacture of Fashioned Knit Goods. These articles will be prepared in his usual thorough manner and will be illustrated.—Editor.

DESIGNING ON THE SPRING NEEDLE CIRCULAR FRAME.

BY WILLIAM DAVIS, M. A.

DESIGNING.

The designs naturally depend to a large extent on the use to which the fabric has to be put, the designs used for hose and half hose are of a quite different character to those used for underwear, and the designs found on sporting hose tops are quite different from either of the other two classes. The means of representation on squared paper is again adopted, a mark being taken to represent a lace point, in other words, a mark indicates that at that point of the pattern the corresponding needle will have its stitch removed and transferred to the neighboring needle. A number of representative designs are given to illustrate the chief principles on which all such designs have to be carried out. In the plainer types of design, when the lace points are introduced with considerable frequency, then the whole character of the fabric can be altered until there is little to show its real origin. Of recent years there has been considerable demand for fabrics for summer wear which are cellular in appearance and light in weight, the ordinary knitted fabric proving too "clammy" on very warm days and making the wearer uncomfortable. It is not infrequently found that such fabrics are quite as effective heat retainers as the more compact style of goods, the explanation being something akin to that afforded by the veil, which although extremely thin and net-like in form, preserves the heat of the face by maintaining between itself and the skin a layer of still air which acts as a heat retaining medium.

A number of typical designs from which successful fabrics are made, is shown on plate D and the fabrics corresponding are in some cases also given. Design 1 is arranged to have every fourth needle transferred on alternate courses of knitting and the effect is shown at fabric 1, where the openings in the cloth show a very definite vertical effect. Were it not that at the edge of the opening, the fabric shows slightly thicker on account of the superposing of the loops, one might mistake this pattern for one made

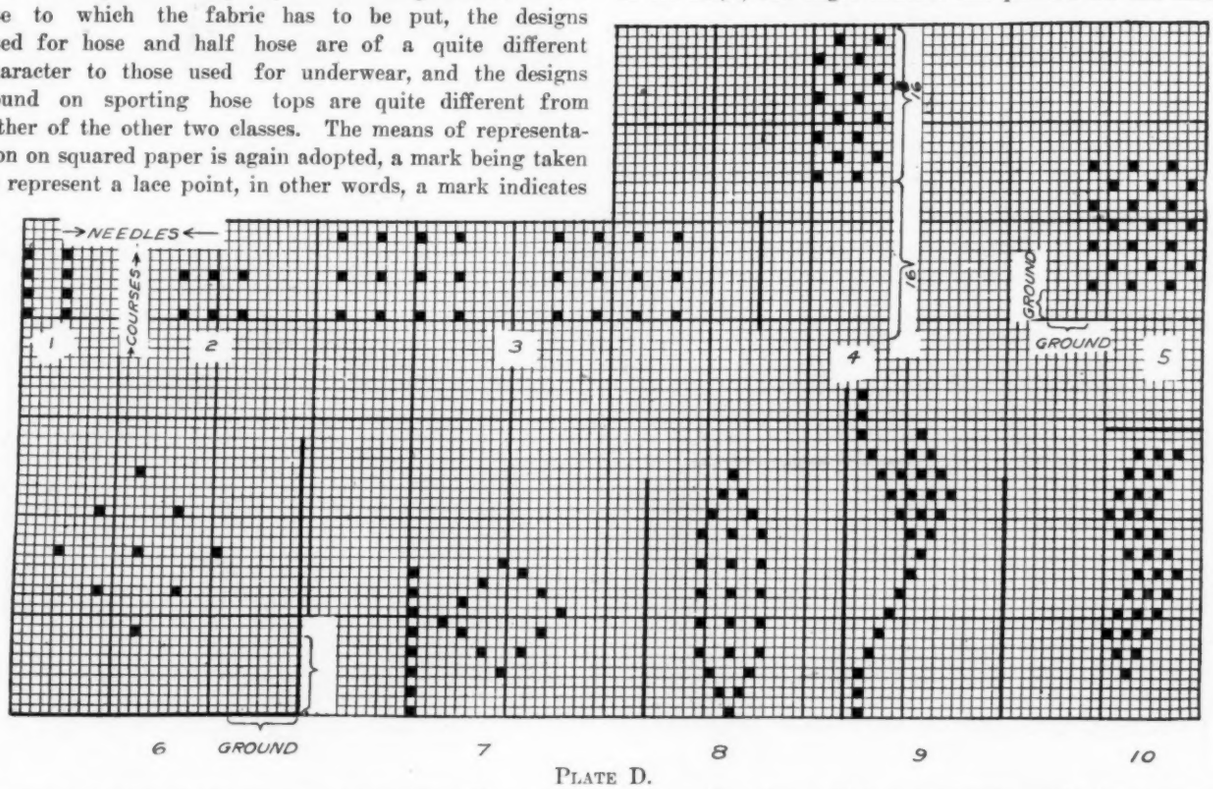
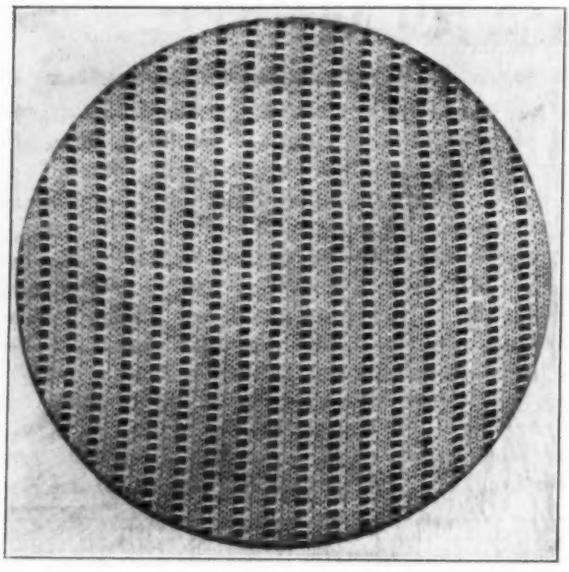


PLATE D.

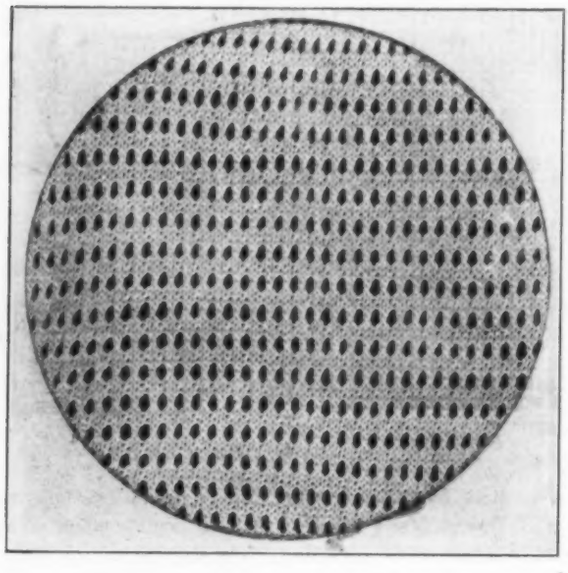
on a machine from which every fourth needle has been removed. Design 2 and fabric 2 shows a similar effect which occurs in a horizontal direction. The squares of the design paper, read in a horizontal direction correspond to the needles, and those in the vertical direction stand for the courses. In design 2 every third needle has its stitch transferred on every fourth course. That is, three courses are worked plain and on the fourth, the lace tackle is brought into work in the usual manner, lifting every third stitch. Design 3, with the corresponding fabric 3, shows a broader vertical stripe in lace design, there being four vertical rows of stitches alternating with an equal width of plain fabric, the stitches being transferred after every four courses. It will be noted that in transferring a stitch, a space or open-

ing is made which is considerably larger than the space occupied by the stitch itself. This is caused by the supports of the neighboring stitches giving way so that they, so to speak, "fall in" and become contracted in size, thus



FABRIC 1.

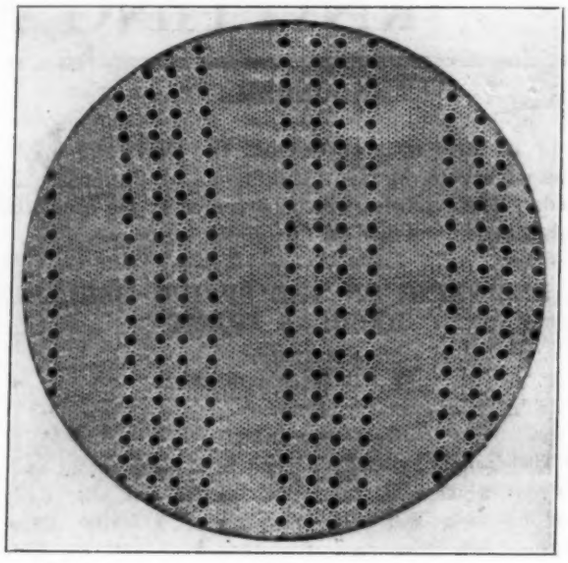
giving more space for the opening. This fact has to be carefully kept in mind in making out designs, otherwise faulty fabric structure will ensue. A common mistake of the beginner is to distribute the lace points much too frequently, which results in a loss to the artistic effect of the



FABRIC 2.

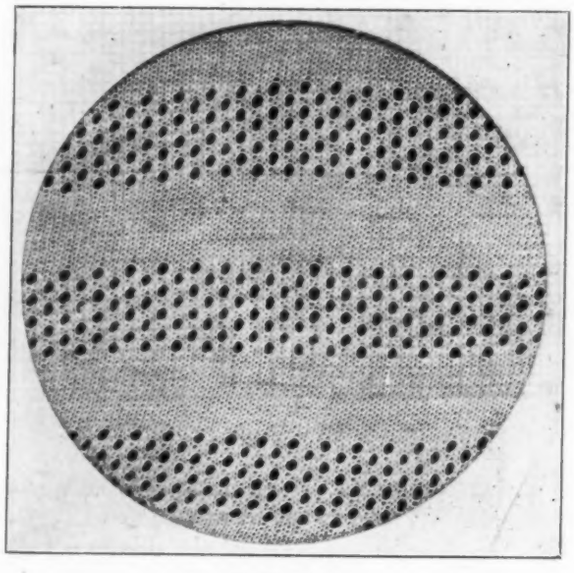
design and also to the stability of the fabric from the point of view of the wearer. It is also remarkable that the gain of material by the elevation which occurs at the point where the stitch has been transferred is very little compared with the opening which is formed. In the finer fabrics practically no elevation is discernible.

For many purposes it is useful to have the lace effect striped in the direction of the width, and design 4, with its fabric 4, gives an illustration of this useful method of variation, the plain fabric extending for 16 courses and the lace effect, a closely indented one, is carried out for 16



FABRIC 3.

courses. This principle of design is capable of still further extension, and a prevalent mode is to vary the lace effect used, for instance the effect shown in design 3 could be made to alternate with the effect shown in design 4 to form horizontal stripes. Some very effective patterns also are

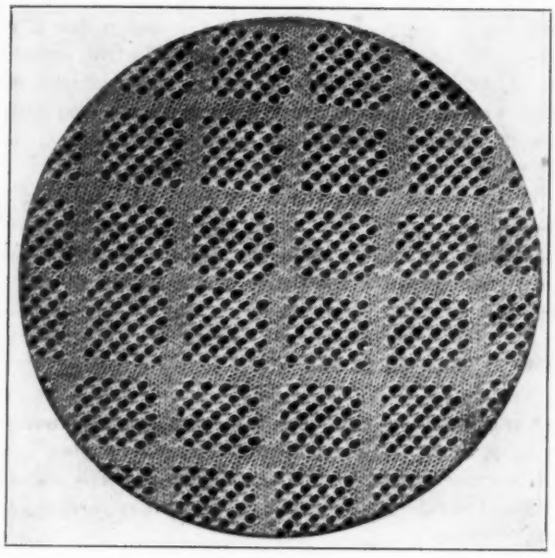


FABRIC 4.

obtainable by combining a vertical with a horizontal lace effect, for example, 16 courses of design 1, which gives a vertical effect, and 16 courses of the lacing of design 4, which makes the horizontal element. The horizontal stripes in one lace effect can be further elaborated by a variation in the distance apart of the lace effect. For example the pattern could be as follows:

Plain: 24 . 7 . 3 . 3 . 7 . 3 . 3 . 7.
Lace: . 1 . 1. 1 . 1 . 1 . 1 . 1 . 1.

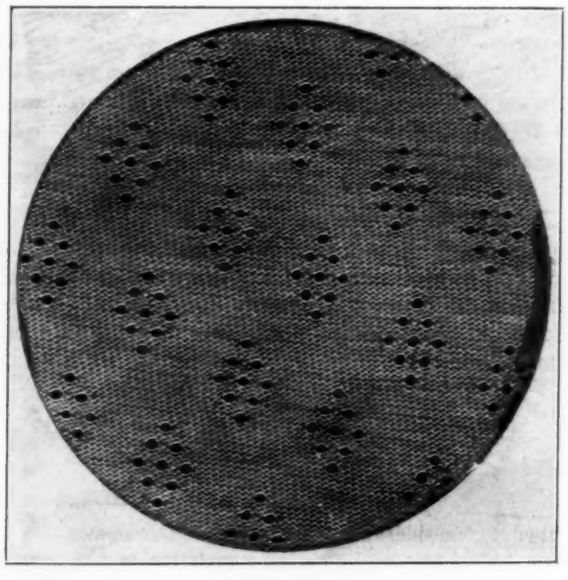
The lace pattern, it will be noticed, is symmetrical with large stripes of plain fabric intervening and the resultant combination is very effective and ornamental, being useful for hosiery. Taken in a vertical direction the lace effect



FABRIC 5.

of design 4 and that of design 3 can be used with very good results, an example of which would be the following design:

Design 4 lace effect: . . 6 .
Design 3 do. do. : 1 . 1
Plain courses : 12 .3 . 3.

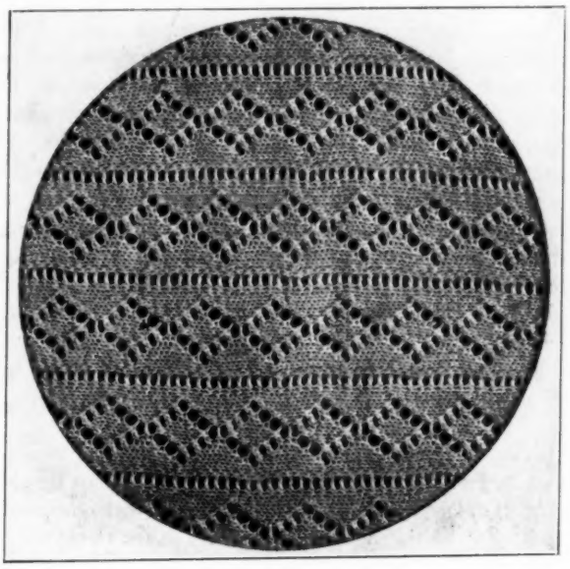


FABRIC 6.

When the proportion of lace pattern is increased in excess of that of the plain courses, then it is the plain courses which have the effect of pattern making, the lace stitch forming the ground and the plain portions giving an appearance of having been filled in to the lace ground. This would be done by having 12 needles lace pattern of design 3, and 4 needles plain stitch, a very nice design is also made by having rather broader vertical stripes of plain and lace, for instance, 16 needles lace, 16 needles plain.

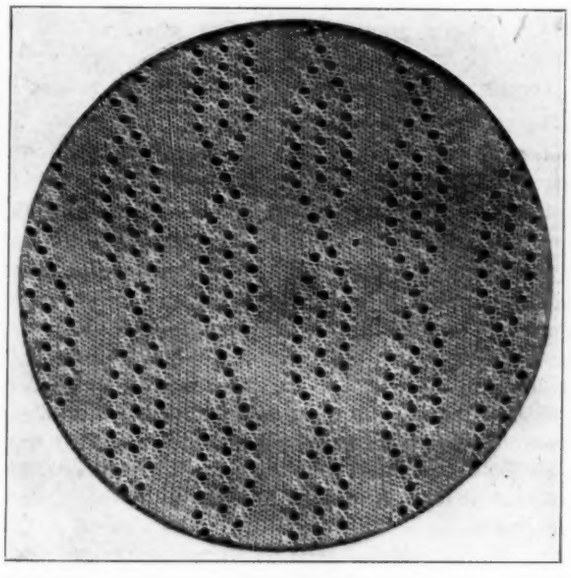
CHECK EFFECTS.

When both the vertical and horizontal elements are combined very smart designs can be forthcoming by using one or other of the lace patterns already referred to. Design



FABRIC 7.

5 and fabric 5 show an example of this, when it will be noted that the plain courses occur 3 needles in the vertical and 4 courses in the horizontal direction, there being about 12 courses square of lace pattern as shown in the design. Here it is the lace pattern which appears as the ground, the plain having the effect of giving the pattern result.



FABRIC 8.

The design given in design 6 and fabric 6 is a type which opens up a wide field for origination, being of the diamond style. The diamond effect is placed on a plain ground and the changing position of the figure which is the result of the relation of the teeth in the presser wheel to the needles of the frame, has the effect of giving an alternate appearance. This is very desirable in order to take away the stiffness which is the inevitable result when the pattern occurs in exactly the same position in the fabric

each time. In design 7 and fabric 7 is given an example of the combination of diamond and vertical striped lace effect which bulk so largely in goods of this class. For variation the intervening vertical lines may occur in twos or threes and the spacing can also be altered in different patterns. A rather larger effect is given in design 8 and fabric 8 which will serve to show that in this direction there is limitless scope for the ingenuity of the designer and effects both ornamental, and in point of fabric structure, useful, can be readily forthcoming. Design 9 has a very elegant effect in the fabric and design 10 is an example of a zig-zag design which gives the lace effect in predominence. Some very good patterns of the most complicated character can be produced by introducing a lace effect which runs in the form of a twill, an example of which would be: Plain course: 24 . 3 . 3 . 3 . 3. Two and one lace: . 1 . 1 . . 1 . 1. Twill pattern: . . . 12 . . . It will be noted that the pattern is symmetrical on either side of the twill effect.

COLOR.

If the striping tackle be also in use on this machine then a further wide field for patterns is opened up by combining the lace patterns just described with horizontal stripes of color introduced at will in either the plain or lace portions of the design. If the design of the lace portion be of a fancy character it will not be in good taste to introduce more than two colors, otherwise the design will have the appearance of being overloaded. Great improvement can be made on a lace design by having one color introduced in the plain pattern of the design for a few courses. It also follows that further effective combinations of color may be made by having the ordinary tuck pattern presser wheels in work along with the lace design, and with all those means at his disposal, the designer need never be at a loss to bring out novel effects.

For the pattern lace wheels the same principles of determining the size of the design and wheel apply as was explained in connection with the pattern presser wheels, the designer having a knowledge of the widths of pattern which will give the right results on any of his machines.

[*Note.—If any reader or readers of* COTTON *desire further explanation on any of the points advanced by Dr. Davis in the foregoing series on the spring needle machine, or if any questions have arisen in any way pertaining to this subject, the editorial department will be glad to receive communications in this connection and will endeavor to have suitable answers and explanations prepared in reply.—Editor.*]

Dyeing, Bleaching and Finishing.

NOTES ON DYEING, BLEACHING AND FINISHING.

BY J. MERRITT MATTHEWS, PH. D.

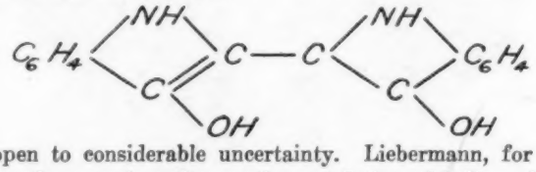
STUDIES IN THE CHEMISTRY OF COTTON XYLOIDINS.

The xyloidins are parchmentised or structurless low nitrates of cellulose produced by the action of diluted nitric acid on cotton. The governing conditions are the physical state of the cotton (preferably loose cotton-wool), the concentration of the acid, and the temperature. Higher temperatures afford wider limits of the concentration of the nitric acid; at about 64 degrees Fahr., nitric acid ranging from 1.469 to 1.479 sp. gr. is recommended. To obtain homogeneous products the cotton should dissolve practically completely in the acid. A convenient method for the preparation of the xyloidin consists in moistening 10 grams of loose cotton with twice its weight of water, and then steeping in 300 c.c. of nitric acid of sp. gr. 1.5 until dissolved. Care must be taken by cooling to avoid an excessive rise of temperature.

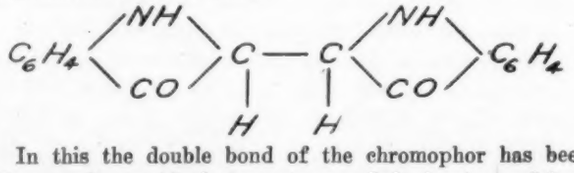
The viscous solution so obtained is poured into water, when the viscosity of the acid solution rapidly decreases and in about 24 hours becomes equal to that of water. The nitrogen content of xyloidin preparations ranges from 6.2 to 8.8 per cent, according to the concentration of the acid. Their solubility likewise varies with the concentration of the acid and other conditions of preparations. Products with 6 to 7 per cent of nitrogen are insoluble in all the ordinary solvents for nitrocellulose, while those with higher percentages are soluble in glacial acetic acid, and are gelatinised or partially soluble in other solvents. The hydroscopic moisture if the xyloidins is less than that of cotton, being only 2.5 to 4 per cent. If the solution of cellulose in nitric acid is exposed to the air for several days, the xyloidin gradually separates as a pasty precipitate. The xyloidins are rapidly attacked and dissolved by concencentrated bydrochloric acid, with evolution of nitric oxide, and formation of acid cellulose, soluble in strong hydrochloric acid.

NOTES ON THE REDUCTION OF INDIGO.

Though the chemical formula and the reactions for indigo blue itself has been carefully studied and verified, comparatively little in a chemical way has been done to clearly determine the chemical properties of the reduced product of indigo known as indigo white. The formula for indigo white proposed by Baeyer,



is open to considerable uncertainty. Liebermann, for instance, by experimenting on the acetylation of indigo white, found that it gave a diecetyl indigo white, which would indicate that instead of Baeyer's formula, indigo white should probably be written thus:



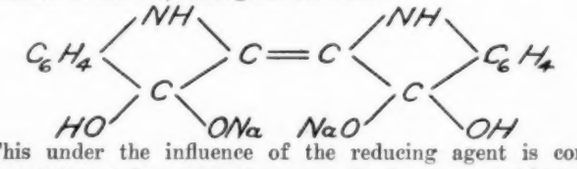
In this the double bond of the chromophor has been taken up by two hydrogen atoms. Only in a roundabout

manner can a second modification be obtained corresponding to Baeyer's formula, and possessing different properties from the body previously mentioned. Indigo white therefore exists in two tautomeric forms.

The change of indigo into the so-called "leuco" compound indigo white is in any case a question of the addition of two hydrogen atoms to the molecule. According to Binz, indigo is not changed to indigo white by nascent hydrogen in an aklaline medium, but other powerful reducing agents rapidly bring about the change. Hence it is probable that the reduction is not an addition of hydrogen, but a withdrawal of oxygen.

When the Badische Co. introduced their new compounds of indigo with alkali salts, the existence of these bodies had already been conjectured by Binz, as he had discovered analogous reactions between indigo sulphonic acid and alkali. This supplied the key to a new explanation of the formation of indigo white.

From this point of view the reduction takes place in two stages. In the first place, an alkaline addition product is formed in the vat, having the formula:



This under the influence of the reducing agent is converted into indigo white by removal of oxygen and simultaneous loss of water.

Binz's theory agrees with many well-known facts and explains many observations which would be difficult to understand on the simple theory of the addition of hydrogen.

The change of the halogen indigoes into their leuco compounds by treatment with indigo white is a striking proof that the entrance of halogen groups into the indigo molecule gives rise to derivatives more easily reduced than indigo. In the same manner the halogen derivatives of indigo take up alkali much more readily than indigo itself, and the resulting compounds are much more stable.

The theory of the formation of indigo white by means of an intermediate alkali compound, however, is only supported by the facts in connection with the reduction of indigo in an alkaline medium. In the case of reduction in an acid medium, experimental proof of the existence of an intermediate compound is lacking, and the formation of indigo white may be due to the addition of hydrogen.

The fact that indigo may be reduced in an acid medium, though mentioned in earlier studies of indigo, has of recent time been apparently neglected. Berzelius noticed that indigo could be reduced in an acid medium by treating with a mixture of alcohol and sulphurous acid, but as in this case a considerable part of the dyestuff is destroyed, no technical application of this reaction has been made. Schlumberger later observed that indigo may be converted into indigo white by treatment with an acid solution of hydrosulphite. Galland, by working on the indigo-indophenol vat of Koechlin and Witt, showed that indigo may be reduced with zinc and bisulphite without the addition of an alkali. Considerable interest was taken in this vat at the time, but it has since been forgotten.

The subject of over-reduction in the indigo vat is very important in dyeing and printing, and it is even yet not completely understood. The secondary reactions which occur in the vat cause both a loss of the reducing agent and also a loss of dyestuff. The amount of loss in both cases depends very much on the kind of vat used and the conditions under which the vat is operated.

In the copperas vat a large loss was incurred, consequently the use of this vat has been almost completely abandoned at the present time. In the zinc-lime vat there is also great danger of over-reduction, owing to the necessity of employing a large excess of zinc dust. The same is also true of the bisulphite-zinc dust vat, for the reduction with zinc dust and bisulphite without alkali only takes place in the presence of a large excess of zinc.

In the case of reduction with glucose the loss in the vat is large, as shown in the glucose printing process of Schlieper. If the conditions of steaming are not very carefully adjusted, a large amount of the color will be destroyed. In the zinc-lime vat if the heat is raised too high, a loss of dyestuff results from a decomposition of the indigo into indoxyl. This latter substance by oxidation in the air in the presence of the alkali in the vat, is converted into a red substance called indoxyl red. This body has been known for a long time as a constituent of natural indigo. In the normal state of the vat it does not exist, or is only present in very small quantity. It has only a slight affinity for cotton. Its presence is especially unfavorable in printing when the indigo is to be discharged with chrome.

There is another feature of the indigo vat which has not been definitely cleared up, and that is the loss of dyestuff by the formation in the vat mud of a yellow substance. Berzelius noticed the formation of this substance and considered it as a basic insoluble calcium salt of indigo white, which was not easily converted into indigo by ovidation in the air. Schumberger, however, has shown that the evidence of the existence of a basic calcium salt was not conclusive.

Owing to its chemical character, indigo white can combine with metals forming salt-like compounds. Its salts with the alkali metals are quite soluble in water, but those with lime and magnesium are only sparingly soluble, while the salts with the heavy metals are practically insoluble. Since the introduction of discharge printing with indigo with formaldehyde-hydrosulhite compounds, the zinc and iron salts of indigo white have been applied in printing.

Formerly it was supposed that an excess of alkali was required with the reducing agent in the vat in order to convert the indigo into a soluble indigo white compound, but after the introduction of the hydrosulphite vat it was found that the amount of alkali could be considerably reduced. Of recent years considerable change in ideas has taken place in this respect, especially since the introduction of synthetic indigo, and now indigo white preparations are made and used in commerce. The "indigo vat" (of the Badische Co.) or prepared soluble indigo white ready for use consists of the pure sodium salt of indigo white. Through the introduction of this product dyeing in a faintly alkaline vat has become a simple matter, and is likely to be employed more and more in the future.

SOME CONSTITUENTS OF RAW COTTON.

Knecht, in a paper recently presented to the Journal of the Textile Institute of England, has given some results as to the examination of raw cotton with reference to the wax thereon. It seems that raw Egyptian cotton fiber, when exhaustively extracted with benzine, yields 0.47 per cent of crude cotton wax. This wax has the appearance and consistency of beeswax. On treatment with petroleum spirit the crude wax was resolved into two constituents. First,

cotton wax (a) to the amount of about 70 per cent soluble in spirit; second, and cotton wax (b) insoluble in petroleum. Cotton wax (a) has a pale color. It melts at 66 to 67 degrees C. and consists for the most part of a true wax containing besides some free fatty acid, small proportions of glyceride and some hydrocarbon. Cotton wax (b) is a dark green, granular but plastic substance, melting at 68 degrees C. and containing very little free fatty acid.

The Egyptian cotton deprived of wax yielded on extraction with alcohol 0.68 per cent of a solid extract, amorphous, very hydroscopic and of a very rich brown color. Aqueos extraction which follows gave 1.46 per cent of a brown hygroscopic substance similar to the alcoholic extract. Ammonia (25 c.c. of strong ammonia per liter), extracted 0.48 per cent. Formic acid at a similar dilution extracted 0.46 per cent of matter which was mainly mineral. Texas cotton yielded 0.55 per cent of crude wax soluble in benzine; the alcoholic extract amounted to 0.90 per cent and contained 1.07 per cent of nitrogen; it reduced Fehling solution strongly; the aqueous extract was 1.61 per cent, ammoniacal extract 0.39 per cent, formic acid extract 0.72 per cent. The exhausted Texas cotton was digested with cold dilute hydrochloric acid and yielded a further 0.43 per cent of extract. Bengal cotton yielded only 0.38 per cent of crude wax.

Spinning trials were conducted on a large scale with Egyptian cotton deprived of its wax. The dewaxed material behaved very badly in the drawing and spinning processes, giving an excessive amount of waste, irregular results, and showing a tendency to adhere to the rollers. Finer counts gave great trouble and breakages were extremely frequent. In the loom, used as warp, the dewaxed thread was also troublesome on account of breaks. The yarn spun from the dewaxed cotton is 24.5 to 27 per cent weaker than the ordinary yarn. On the other hand the extraction of the wax from ordinary yarn after spinning increased the strength by 13 per cent. The addition of 25 per cent paraffine wax to the extracted yarn decreased in strength again by 33 per cent. Hubner has conducted drying experiments with the cloth manufactured bee wax and raw Egyptian cotton. The standard dye stuff gave lighter shades on the extracted cotton than on the ordinary. Methylene blue and certain other dyestuffs on the other hand dye darker shades on the extracted cotton.

Notes About Men You Know.

EDWARD W. SMITH, who has been connected with the Utica Fine Yarn Corporation for the past four years as overseer of carding, spinning and winding, has been appointed superintendent.

Z. V. GRAY has accepted the position of overseer of spinning at the Loray Mill, Gastonia, N. C.

W. D. INGLE, who has been for the past few months at the Wylie Mill at Chester, has returned to his former position as superintendent of the Richland Mill, Columbia, S. C.

WILLIAM H. HARRIS, formerly treasurer and agent of the Slater Manufacturing Co., Pawtucket, has opened offices in the New York Life Building, 346 Broadway, New York, where he will carry on a general textile brokerage business in all silk, all cotton and silk and cotton fabrics.

CHARLES W. JOHNSTON, president of the Highland Park Mills of Charlotte, and Rock Hill, the Brown Mfg. Co., of Concord and the Anchor Mill at Huntersville, has recently been elected president also of the Jewel Mill at Thomasville, N. C.

ELMER B. GAY, JR., boss comber for the New England Cotton Yarn Co., New Bedford, Mass., was married Wednesday evening, November 25, to Miss Edith Palmer of Fairhaven.

HERBERT C. WOOD has resigned his position as overseer of carding of Holmes Mfg. Co., New Bedford, Mass., to accept the position as assistant superintendent of the Union Wadding Co., at Pawtucket, R. I.

ARTHUR M. DIXON, superintendent of Trenton Cotton Mill of Gastonia, has been elected to the North Carolina state senate. This is a move along the right line. The sooner manufacturers get into politics, the sooner foolish laws will cease to be enacted.

EDWARD YEAW, second hand of carding for the past nine years at the plant of the Warwick Mills, Centreville, R. I., has resigned to accept a position as overseer of carding at the Ponemah Mills, Taftville, Conn.

C. W. PARROTT has accepted the position as superintendent of the Hartwell (Ga.) Cotton Mills.

C. T. FALLIN has resigned his position with the Cannon Mills at Kannapolis, N. C., to become overseer of the cloth room at the Fulton Bag and Cotton Mills at Atlanta.

T. A. ADAMS, secretary of the South Texas Cotton Mills, Brenham, Texas, is now attending to the duties of superintendent.

HENRY F. GRINNELL was elected treasurer of the Chace Mills, Fall River, Mass., at the recent meeting of the board of directors, succeeding Joseph A. Baker in that position.

B. W. BINGHAM has become general superintendent of the Prendergrast (Tenn.) Cotton Mills.

H. H. TAFT has been elected president of the Piedmont Cotton Mill, Egan, Ga., succeeding B. L. Willingham.

E. E. SPAULDING has been elected treasurer of the Postex Cotton Mills of Post City, Texas.

L. V. SMITH has been elected secretary and treasurer of the French Broad Mfg. Co., Asheville, N. C.

D. COKER has accepted the position of superintendent of the Demopolis (Ala.) Cotton Mills.

W. S. NORRIS has accepted the position of superintendent of the Lexington (S. C.) Mfg. Co.

HENRY D. MARTIN is now located at Fitchburg, Mass.

JOHN F. SCOTT who resigned as superintendent of Pickett Cotton Mills, High Point, N. C., has accepted a similar position at the Edna Mills, Reidsville, N. C.

J. H. WALTON has been elected president of the Girard (Ala.) Cotton Mills.

L. T. CURRY has been promoted from overseer weaving to night superintendent of the Maplecroft Mills, Liberty, S. C.

RALPH S. NELSON has been promoted to the superintendency of cloth finishing and will have direct charge of No. 11 cloth room of the Amoskeag Co., Manchester, N. H., the southern division cloth room, the bleach house and the

gingham washing. The two latter departments will be under the supervision of W. K. Robbins.

WILLIAM O'BRIEN, formerly connected with the Avalon Knitwear and the Duofold Health Underwear Co., has accepted the position as superintendent of the finishing room at the Augusta Knitting Co., Utica, N. Y.

J. HENRY MADDEN has been elected secretary of the Dunean Mills, Greenville, S. C.

L. H. BECK has been promoted to general manager of the Spaulding, Boyd-Mangham and Central Mills at Griffin, Ga.

H. C. RAY has been elected president of the Stevenson (Ala.) Cotton Mills.

J. GORDON PATTERSON assistant to the treasurer at the Pacific Mills, at Lawrence, Mass., for several years, has been appointed agent and manager of the Hadley Mills, Holyoke. For the present it is understood that Mr. Patterson will divide his time between the Pacific and Hadley Mills, later giving his entire attention to the latter concern.

E. C. LITTLE, who recently resigned as overseer of carding at the Avondale Mills of Birmingham, Ala., has become superintendent of the Kathrine Mfg. Co., Fork Shoals, N. C.

C. A. LEWIS has accepted the position of night overseer of spinning at the Prendergast (Tenn.) Cotton Mills.

C. L. MONTJOY has accepted the position of superintendent of the Walhalla (S. C.) Mills.

ROBERT WILSON, formerly assistant superintendent of the Eagle & Phoenix Mills, has accepted the position as superintendent of the carding and spinning at the Swift Mfg. Co., Columbus, Ga.

JEFFERSON COOLEDGE has been elected president of the Dwight Mfg. Co., Alabama City, Ala.

ALGERNON J. MILLER, the newly-appointed director of the Putnam Trade School, has assumed the duties of his position. He succeeds H. D. Martin, who recently resigned. Mr. Miller is a graduate of the Bradford-Durfee Textile School.

D. W. WILLIAMS has accepted the position as overseer of weaving in the Pacolet Mill, Trough, S. C.

JOHN F. TIBBETS has been elected president and manager of the Southern Mfg. Co., Athens, Ga.

W. G. RAGSDALE has succeeded J. H. Mullis as president of the Oakdale Cotton Mills, Jamestown, N. C.

J. F. CLARK has become superintendent of the Hopedale Mill, Burlington, N. C.

J. G. COMAN has accepted the position as superintendent of the Tifton (Ga.) Cotton Mills.

S. N. DUGGAN has succeeded William Slattery as secretary of the Knoxville (Tenn.) Spinning Mill.

G. H. JONES has been transferred from superintendent of the Walhalla (S. C.) plant of the Monaghan Mills to a similar position at the Apalache plant of the Victor Mills at Arlington, S. C.

R. B. JACOBS, secretary of the Everett Knitting Co., has been appointed treasurer to fill the unexpired term of the late George S. Roberts.

DAVID KOHN has resigned as assistant to the president of the Judson Mills, to become assistant to the president of the Victor group of the Parker Cotton Mills Co.

G. G. ALLEN has accepted the position of assistant superintendent of the Prendergast (Tenn.) Cotton Mills.

GEORGE F. BREITZ has accepted a position as superintendent with the Selma (N. C.) Mills.

GEORGE E. PREST, superintendent of the Bourne Mills, at Fall River, Mass., has resigned to become general superintendent of the Suncook Mills, Suncook, N. H. He has been superintendent of the Bourne Mills during the past seven years, is a graduate of the Bradford-Durfee Textile School, Fall River, and a member of its board of trustees, having been appointed by the Governor. Mr. Prest succeeds to the position at the Suncook Mills formerly held by Harry J. Ricketson, who resigned to become superintendent of the Butler Mills at New Bedford.

ROBERT L. CRANDALL, formerly of Cohoes, N. Y., is now acting as overseer of finishing at the mill of the Fuld & Hatch Knitting Co., Albany, N. Y.

J. B. WRIGHT, overseer of carding at the Arkwright Mills, Arkwright, S. C., accepted the position of superintendent at the Nokomis Mills, Lexington, N. C.

W. F. SAWYER has accepted the position as overseer of carding at the Weldon (N. C.) Mill.

E. P. MOORE has resigned as president of the Moore Cotton Mills, Lenoir, N. C., but will remain as treasurer of that mill.

A. T. SMITH, formerly superintendent of the Langley (S. C.) Mfg. Co., has accepted a similar position at the Nottingham Mills, Providence, R. I.

CHRISTIAN BAHNSEN, who has been general manager of the Gera Mills at Passaic, N. J., has become part owner, and is one of the incorporators of the new company formed to take over the property from its German owners.

J. J. RACKLEY has been promoted from second hand to overseer of carding at the Delgado Mills, Wilmington, N. C.

F. A. CUMNOCK has resigned as manager of the White City Mfg. Co., Athens, Ga., and accepted the position of superintendent of the Pioneer Mfg. Co., Guthrie, Okla.

JOHN W. MOSS, during the past six years assistant superintendent of the Bourne Mills, has been advanced to superintendent, succeeding George Prest, recently resigned.

J. O. WHITE, general manager of the Moore Cotton Mills, Lenoir, N. C., has been elected president of that mill.

N. C. RICHARDSON has accepted a position of superintendent with the Glenola Mills, Eufaula, Ala.

E. C. GRADDICK has accepted the position of superintendent at the Barrow County Cotton Mills at Winder, Ga.

Z. N. EPPS has become overseer of carding and spinning at the King Mills, Burlington, N. C.

T. E. B. MCCARN has become general superintendent of the Capelsie Mills, Troy, N. C.

J. W. ROBERTS has been promoted from second hand to overseer at the Gibson Mill, Concord, N. C.

W. L. ROBINSON, for many years superintendent of the Cannon Mills, Concord, N. C., has incorporated the Robinson Mfg. Co., and will take over and enlarge the Charlotte (N. C.) Cordage Co.

Practical Problems Discussed by Cotton's Readers

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so indorsed. This department is open to all. Suitable letters are paid for in cash.

A QUESTION ON INSPECTION.

EDITOR COTTON:

Will you kindly advise me what is considered the best color for a back ground over which to pass finished cloth (cotton in the white) like voiles, lawns, dimities, etc., for the inspection of the cloth for damages, oil spots, grease, stains, or defects in general?

I shall be glad to have the readers of your practical discussion department give this subject attention and render information as their experience has indicated.

E. M. (Rhode Island.)

SOME EFFECTS OF TWIST AND DRAFT.

EDITOR COTTON:

I have found the contraction in twist to be worthy of more consideration than it receives. Suppose for an illustration that we desire to make 30's yarn out of 5.56 hank roving, double. Divide by two when using double roving. Thus: $5.56 \div 2 = 2.78$ hank roving single. 30's $\div$ 2.78 = 10.79 draft. The constant is 320. Dividing the constant by the draft equals the number of teeth for the change or draft gear. $320 \div 10.79 = 29.6$ or a 30 tooth gear.

But when you rig a frame up as these figures show and run enough yarn to get a test, you will find it to weigh 28's yarn instead of 30's as was intended. The reason for this is the contraction from the twist. The 30's is the theoretical weight before twisting. The 28's is the actual weight after the twist has been insterted. Therefore in order to produce 30's yarn we must use a 28 tooth draft gear. Now to apply the rule. If a 30 tooth gear produces 28's yarn, what gear is necessary to produce a 30's yarn? $30 \times 28 = 840$ and $840 \div 30 = 28$ or a 28 tooth draft gear,

Let us now figure again to see if we are correct. Constant $320 \div 28$ tooth gear = 11.43 draft. 11.43 draft $\times$ 2.78 H. R. = 31.78 yarn. This is the theoretical weight before considering the contraction by twist. However, by testing this yarn it will be found to weigh 30's or nearly so. What is the percentage of contraction? Rule, 30.00's yarn, actual weight, divided by 31.78 yarn, the theoretical weight, and this product subtracted from 100 equals the percentage of contraction. Thus, $30.00 \div 31.78 = .94$ and $100 - .94 =$ 6 per cent. Proof: $37.78 \times .94 = 29.8732$ or nearly 30's yarn.

When standard twist is inserted the contraction will be a little less. Also standard twist makes a better and stronger yarn where the stock is suitable for the counts produced. I know of a mill where the cotton was too short for the grade of work, the carder would run standard twist and when the sliver reached the slubbers it would stretch between the flyer presser and bobbin, the same thing would happen on his intermediate and fine frames. As a result the spinner had to put in an enormous amount of twist to run the work at all. After a while they employed a new carder and he ascertained the trouble at once and put in four teeth of twist, this stopped the stretching, and the spinner was able to take out three teeth of twist and then had good running work and much better breaking strength.

It has been and is held by some that twist strengthens the yarn. This is true until you reach standard and then it will weaken it.

Talk to the overseers of weaving about the work and they all complain about not enough twist when really they have too much and don't know it. When yarn is twisted too hard it is brittle, kinky and will snap with the least strain, it also sheds off in the loom. I have seen men come out of the weave room who looked as if they worked in a flour mill instead of a cotton mill, all on the account of the shedding off of size.

The size is put into the yarn to give it strength to withstand the strain while the weaving process takes place and it should, therefore, penetrate the threads sufficiently to accomplish this purpose. If the yarn is properly twisted and the size properly prepared and applied, it will shed but very little, and it will strengthen and protect the yarn while in the loom. Shedding of size weakens the yarn by pulling out and breaking off the ends of the fibres which protrude from the main body of thread. Therefore, instead of being a strengthener it further weakens it. It is also injurious to the health of the operatives.

STUDENT (ALA.).

MORE ABOUT COMBER SETTING.

EDITOR COTTON:

I would like to suggest some corrections for "J. J. L." in some of his comber settings in December issue. First, when he says set the brushes to the brass bar, he does not say which bar. As they are different distances from the needle points, if you set to the last or finest needle bar, the front rows and between the front rows, will fill up with waste on account of the front bars being lower than the back. I get good results by setting brushes to just touch the fourth bar.

Also, he does not seem to set his steel detaching roll which is the basis of all his settings. Now if this should be wrong or "out" as it is called, all his settings would be wrong, as they are all set to it. I should set this steel detaching roll to a 22 gage from highest part of the segment.

Again, in setting nipper frames in the vise he only gets his knife to hold paper, while he should at the same time set the edge of the plate of the knife to a 21 gage. The object is to put a pretty good angle on the cotton. The closer this setting, the greater the angle of cotton, and deeper the needles will go into the tuft.

Then he gives his top combs too much work and his nipper knife too little. If he would take five degrees off his comb setting, making an angle of 30 degrees and

put five degrees on the nipper knife setting, making 35 degrees, he would improve his work as the greater the angle on the knife, the farther or deeper the needle will go into the tuft. The top comb gets full quick enough with an angle of 30 degrees and is running full and not doing any work most of the time in many mills, although they frequently have the top combs cleaned or picked four to six times a day.

While on the subject of combers I would like to inquire of the readers if they ever obtained good results from a comber on which the actuating cam groove, being worn, had been recut and a larger roll used?

C. L. (Rhode Island).

REPLIES TO CRITICISMS BY H. C. W.

EDITOR COTTON:

In the November issue of COTTON I notice "H. C. W." sees much to criticise in my article on "Metallic Rolls."

I made one bad mistake in the diagram. The diameter of the second roll should read 1⅛ inch instead of 1¾ inch.

I dare say that most readers knew that it was a mistake, for the reason that there is no such hang-up on drawing frames. Besides, the figures in the calculations show that the second roll was figured 1⅛ inch. However, mistakes are liable to creep into any article, no matter how careful we may be. The mistake amounts to little, as very little of the article was devoted to calculations.

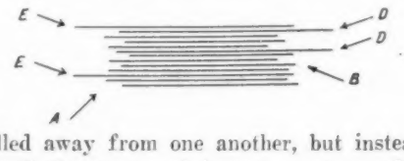
What is the definition of drafting?

If we have a draft of seven on any frame, this means that out of one inch of cotton, we have the fibers pass each other to the extent of six inches, which proves beyond a doubt that many fibers in the first inch are not acted on at all, or in other words, a few fibers of the first inch are still held by the drawing rolls when the strand is drawn to the amount of 6¾ inches. To prove that the fibers pass each other gradually, notice a dirty piecing going through. It will be seen that dirty fibers will be found in the cross section of the strand or thread in every inch that has passed the drawing rolls. In drafting, since the speed of rolls increases with each pair nearer the front of the machine, the cotton, as it passes through the rolls, is greatly diminished in weight per yard from back to front. This is due to a certain number being drawn past the others. It is not a case of first come served, for the reason that all fibers make a complete somersault at each process. In order to reason out this statement, let the reader stop and think that when he breaks out a can or bobbin from a preceding process, he must put up at the back of the proceeeding process, the end which contains the fibers lastly acted on by the drawing rolls of the preceding process.

With this in mind, let us study what takes place between the drawing rolls during the drafting operation. Why should the distance between the centers of each pair of rolls always exceed the average length of the staple of the cotton being used? There are two reasons: (1) it is to save the fibers from being broken, and also to eliminate the danger of the front roll being checked, thus causing a hard end, or cockled yarn; (2) to insure a gradual draft between the rolls. To make it more clear to the reader, let us consider the drawing delivery. The front pair of rolls revolves faster than the back pair, and with the rolls properly spaced, how is it possible for the fibers to be pulled away from each other? One or more fibers are under the action of the drawing rolls at all times. At no time are they separated. In the process of combing the fibers are grasped by the roll and are drawn away from the others.

These are "H. C. W.'s" own words.

Let us assume the illustration is an inch of cotton. Again let us assume that the part A was the end of the sliver leaving the finisher drawing head. Fibers E are the last fibers to be acted upon by the drawing rolls of the drawing head and the first to be acted upon by the drawing rolls of the slubber frame. This illustration should, I think, prove that fibers D will be acted on first by the drawing rolls of the intermediate. Therefore, they are



never pulled away from one another, but instead of this they are pulled at one end in one process and pulled at the opposite end in the next process. In this way the fibers are drawn a slight distance past each other, and *the amount of the draft determines the distance they are drawn past each other.*

Another way to prove this definition of drafting, is to hold firmly in mind what has already been said, and then consider a draft on any frame to the amount of three inches and the staple under action 1½ inches long. This reasoning proves that the majority of the fibers in the first inch would still lay parallel, the draft not being long enough to draw the fibers away from one another. Therefore we must say *by, or past each other.*

I want to go on record as stating that any machine which has a draft of 70 inches is a failure, and I agree with the writer of the article referred to.

I wish to state also that I had the pleasure of talking with the president of a large machine company who saw the device and he also pronounced it a failure.

"H. C. W." finds .14 inch overlap on the rolls. .07 of an inch in diameter makes a difference in radius of .035 of an inch. The fact that each roll extends toward the other roll .035 of an inch beyond the surface of the contact collars (naturally gives an overlap of .035 + .035 = .070 of an inch).

To the next criticism regarding the draft of .966 between the calender rolls, I should like every reader to study this explanation carefully. There are two drafts to a railway head. This is one of the strongest points against the railway head. Let a heavy strand pass through the trumpet of a railway head and after it has passed the action of the railway head, stop the frame immediately and you will find that by taking the diameter of the cones at a point where the cone belt is found that the draft will prove much greater than that shown between the rolls. While on the other hand, if the same test is made when a very light place passes the trumpet, the total draft will be found less than the draft between the drawing rolls. It could be said here, also, that this is not drafting. What I have said here can likewise be said of the drawing frame, for the reason that the draft is not positive between the rolls on any machine using leather covered rolls.

"H. C. W." says, "And then the writer says it is possible to, and even necessary to run this frame with what he calls a draft of .966 between the calender and front roll. In the first place there is no such a thing as a draft of one or less than one. This is not drafting."

I have had 25 years' experience in the card room. In all that time, I never had a draft of one between the calender and front rolls when using common leather rolls. Now, let the readers turn to the statement of "H. C. W." regarding the draft he now has between his calender and the front rolls. He says, "I am using a 59 calender roll gear and have a draft of 1 .03 between the calender and front rolls, figured and actual."

Let us see what takes place between the calender and front roll when we have an actual figured draft of 1.00. Common leather rolls are driven by frictional contact and it has been proven by many tests that they lag behind the speed of the bottom steel roll even when there is no stock passing through. Now, can "H. C. W." or any other reader deny that wiry cotton, close settings, high speed and worn or dry saddles, will not cause any leather top roll to lag behind the speed of the bottom roll? Therefore, we have a draft of .966 between the calender and front rolls, as the loss in friction of the front top leather roll amounts to .034. We must also make the draft between the drawing rolls a little greater to make up for the slippage of the front roll.

We have a draft of one in the diagram given in my article, but not actual.

Why do we use the term *actual draft* if the leather rolls are positive?

What would you think of a carder who would say, that he has a draft of 1.03 between the drawing rolls and the surface of a bobbin on a fly frame? Is it not the same reasoning? Is not the distance as great? You can, of course, have a draft as long as you like between the calender and front rolls, but you are simply pulling the web apart, and the injury is just as great as running a tight tension on a fly frame, and if there is any difference I would appreciate having it thoroughly explained. Therefore, when we have a draft of one or greater between the calender and front rolls on a drawing frame, we pull the web to pieces.

"H. C. W." says, also, "Again the writer tells us that a 1⅛ inch diameter roll, 32 pitch, should be figured 18-6."

"This is away off as all practical carders know." The following should be enough to prove to "H. C. W." and other readers that I was pretty well posted on the subject of which I wrote:

When drafting a drawing frame equipped with metallic rolls, in taking the diameter of the rolls, it should be remembered that an allowance should be made for the meshing of the flutes, because the diameter of the rolls is increased. A 1⅛ inch diameter roll, 16 pitch, should be figured as 10-6; a 1⅛ inch diameter roll, 32 pitch, should be figured as 9-6; and a 1⅜ inch diameter roll figured as 18-6.

Following is the draft calculation of the common and metallic rolls on a Howard & Bullough drawing frame. In figuring the draft of the metallic rolls, for example, if you wanted a draft of 6 you would have a figured draft of about 5.5 and add nine per cent, which would give an actual draft by weight of about 6.

The first figures are to be used in the draft calculations for metallic rolls, the second for common rolls; calender roll diameter, 3 inches, figured as 18-6; calender roll gear 30 to 34; front roll gear driving the calender roll, 19, 16; front roll gear 22, 22; crown gear, 98,98; draft gear, 46, 60; back roll gear, 71, 65; back roll gear meshing into intermediate gear, 28, 24; electric roll gear, 20, 24; electric roll diameter, 1⅛ inches, figured 10-6; 1⅛ inch intermediate roll gear meshing into back roll gear, 30, 30; intermediate gear meshing into gear on third roll, 36, 36; gear on third roll, 23, 24; gear on second roll, 30, 38; intermediate gear meshing into gear on second roll, 28, 24; intermediate gear meshing into front roll gear foot end, 40, 40; front roll gear foot end, 20, 20; front roll diameter 1⅜ inches, 32 pitch, figured 11-6, 1⅜ inches; second roll diameter, 1⅛-inch, 32 pitch, figured 9-6, 1⅛ inches; third roll diameter, 1⅛ inches, 24 pitch, figured 9-6; and back roll diameter, 1⅛ inches, 16 pitch figured 10-6.

$18 \times 19 \times 98 \times 71 \times 20 \div 30 \times 22 \times 1 \times 28 \times 10 = 257.53$, draft constant metallic rolls.

5.5 draft desired, $257.53 \div 47 = 5.5$ draft. $5.5 \times 1.09 = 5.995$ or 6 actual draft.

From this it can be seen that when an actual draft of six is required, you must have a figured draft of 5.5, and add nine per cent which gives an actual draft by weight of 6.

$24 \times 16 \times 98 \times 65 \times 24 \div 34 \times 22 \times 1 \times 24 \times 9 = 363.35$, draft constant common rolls. $363.35 \div 6 = 60$ draft gear.

Thus it will be seen that the drafts shown will give the same weight finished sliver under the same conditions. The overlap caused by the meshing makes the actual draft longer than the figured draft, and the draft between the rolls has to be changed.

"H. C. W." states, "I have a draft of 1.03 between the calender and front rolls, figured and actual." This is an impossibility with leather rolls.

Evidently he does not sufficiently differentiate between figured and actual drafting, for he also says, "if there is not a positive draft with leather rolls I fail to see where positive draft can be obtained with metallic rolls.

No one can if he does not study the manner in which both are driven. Common leather rolls as stated, are driven by friction, that is, their own weight or any added weight keeps them in contact with the material going through, or with the bottom roll. The top rolls of a metallic set are positively driven by the flutes of the lower roll meshing with the flutes of the upper roll, and consequently a more positive draft is obtained than with common rolls. Of course "H. C. W." has a right to his own opinion. For my part, I favor metallic rolls on every machine preceding the intermediate and for all classes of work. On the intermediate and proceeding machines, I favor ball-bearing rolls, because they reduce the amount of friction to a large extent.

Wm. Shaw

HIGH VS LOW GRADE STOCK.

EDITOR COTTON:

I have very often wondered if some mills did not make a costly mistake by using a too low grade stock. Mind you, I am not contending that it would be wise to use Egyptian

or Sea Island stock for an osnaburg product, yet I believe this mistake might be more profitable than the other extreme in most cases. If eastern and foreign mills can afford to pay immense freight bills and manufacture our best lowland cotton under far less favorable conditions, into identically the same class of goods as we do in the South, it seems to me there is a reason and we might with prudence inquire why.

No one informed on the subject will hardly deny that the larger part of our best cotton leaves the South before it is made into cloth or yarn, or that eastern mills use a higher grade stock in the same class of goods generally speaking. Why?

I know some of our friends advocating low grade will argue "first cost" and "final price," but I frankly doubt if there is as much in either as our friends believe. In the first instance it is not so much a case of the price per pound paid for the raw stock as it is started in the plant, as it is a question of the price per pound of stock as represented in the finished product. To make my meaning clear, it is not what we put in the mill so much as what we get out of it that counts. If we start 1,000 pounds of cotton and 400 pounds is lost in waste so that only 600 pounds reach the ware room as product, could we not have considered it a cheaper proposition to buy cotton at a few cents more per pound if from the same 1,000 pounds we could have made 700 pounds of finished product? When handling low grade stock, is not this in a large measure just what happens?

That the amount of waste taken out depends on how the various machines are set, is, I know, in a measure true, but is it not a fact that far more leaf, dirt and short staple is found in low grade than in high grade stock; and is it not true that a high grade will yield a less percentage of waste when run over the same proportionate settings than low grade, for the very natural reason that it is very difficult to remove what does not exist? Also, could we not, with high grade stock secure a more liberal setting than usually allowed with reference to the product desired?

To illustrate, if we are running a goods where the tensile strength of our yarn would allow nothing less than one inch staple, we could not well afford to reduce to 7/8 inch, if our stock was already low grade, for there would be such a large percentage of low grade stock ranging from 7/8 to 1 inch in the staple that a sufficient amount of this length would pass through our machines as to make our yarn decidedly rotten; whereas, were we already using a higher grade cotton we might with prudence allow some mixture as the amount of staple of shorter length would be so low as to scarcely show to any extent in our finished product.

Then as to the final price. The price per yard or per pound may possibly be as much for goods made from high grade as those from low grade stock, but we must consider the amount of salable goods made from a given quantity of raw stock. If 1,000 pounds of our finished product grades 600 first quality and 400 seconds, while with better stock it might be made to grade 800 firsts and 200 seconds, might not the savings on the extra 200 pounds of firsts be considered when we are paying a trifle more for a little better grade of raw stock?

The goods made from low grade stock never finish as well, even in the grey they do not look so good, and after finishing, the difference is even more decided. This was brought forcibly to my mind some time ago while I was where some goods from two different mills were being bleached. I was more or less familiar with the work of both mills and knew about what stock each was using and I confess that the difference was startling to me.

Then take the cost of manufacture. I have known mills even very close together, where in one a weaver would run 10 or 12 looms and in the other only 6 or 8, or a spinner in one run 4 or 5 sides and in the other 8 or 10. Low grade stock may not be the cause in every case, but in many I am sure it has something to do with the difference.

I remember two incidents that are valuable illustrations of the ultimate cost of low grade stock. A mill that had for several years tried to manufacture rather high counts from rather low grade cotton had trouble continually and some overseer was "fired" or quit every few months. Help was hard to obtain and harder still to hold. Finally a superintendent was engaged who quickly located the trouble and had the nerve to contend for his idea. At first the management refused to change, but finally did so, buying a better grade of cotton, with the result that the mill came out of the hole and began to make money.

The other incident was equally as illustrative. A mill sold a quantity of goods from high grade cotton to be used in the manufacture of collars. These goods were perfectly satisfactory, but after awhile a proposition came from the buyer to purchase a quantity of goods of lower grade at a slightly reduced price. The mill fell for the order and substituted a lower grade of raw stock. This the collar manufacturer used for the inside of his collars while the better goods were used for the outside or fronts. This resulted in collars with the outside a good white and the inside a dingy white. Needless to say the mill lost the order and also had to stand a law suit for damage done the trade of the collar manufacturer. T. T. (North Carolina.)

WHO GETS THE FIVE DOLLARS?

EDITOR COTTON:

I see in the November issue of COTTON where "Lancs" is after that $5 check, but I think he will admit after reading the following that he is not yet entitled to it. I want to thank him for all the nice things he says about me, but for his own good and the good of other readers, I am obliged to open fire again.

Now, let us take up his reasoning, for which I have every respect. He states in part, "The greatest evils in having the flyer lead is because of the fact that the bobbins reach their greatest velocity when full, which of course means greater wear and tear, owing to the extra weight of roving the gears have to drive, while with bobbin-leading frames the speed is greatest at the commencement of a set and then gradually diminishes until the bobbins are full." It seems from this statement that "Lancs" is not aware that the bobbin in the flyer-lead at no time exceeds the speed of the flyer, while in the bobbin-lead at no time does the flyer exceed the speed of the bobbin.

How about the wear and tear?

As I stated in my article, there is no difference between an up-to-date fly frame in either system, only that the compound pinion is found on the opposite side of the sun gear.

"Lancs" states also, "we must not forget that the bottom cone does not drive the bobbin-gears, as so many men seem to think." I want to say here that on all the latest bobbin-lead frames, the bottom cone drives the bobbins.

What drives the bobbins at a speed at all times in excess

to that of the flyer on all bobbin-lead frames? The bottom cone of course.

Why is the bell gear larger, and why is the bottom cone higher speeded on all bobbin-lead frames with the new differential motion?

With the flyer-lead, the bottom cone is only a governor, for the reason that the speed of the flyer is always greater than that of the bobbin when the bottom cone is in motion, which is a great aid to the bottom cone; or in other words, the cone follows the load, while with the bobbin-lead the bottom cone works against the load, which can be proven by the following test. Disconnect the train of gears on any bobbin-lead frame from the bottom cone to differential sleeve, then turn the frame around by hand and it will be found that the differential sleeve will rotate in the opposite direction, which proves beyond a doubt that the change in system was wrong.

Make the same test with the flyer-lead, and you will find that the differential sleeve will rotate with the load, or in the same direction as during winding.

"Lanes" is dead right when he states "that when an end breaks it makes the broken end on the bobbin unwind somewhat more than does bobbin-leading frames." He must admit, however, that this trouble occurs very little, and when it does, it is a sure sign to put on a slacker rack gear.

Now, for the vital part of the question. Space does not permit answering "Lanes" as I would like, however, he will find I will not hide as he seems to think. "Lanes" admits that any hesitation of the bottom cone cannot strain the roving, but claims that it is the hesitation, or slippage of cone belt that causes it to run towards the small end of cone, and by unduly increasing the speed of the cone after getting its grip, thus tightens up the ends.

What "Lanes" has doped out is as much against the bobbin-lead as the flyer-lead. When the cone belt slips on any fly frame, the ends are somewhat slackened, and you will not find a single carder that will say that he ever knew the ends to be strained by the cone belt slipping to the small end of the cone. He seems to forget that when the cone belt slips to the small end of the cone that it is much slacker and does not drive the cone as it should.

Let us admit that "Lanes" is right and that the cause is as he states, could not this be overcome by covering the cones with paper or leather, which was done in olden days, when the change in system was made? The friction between the driving shaft and differential sleeve was so great that the cones had to be covered.

However, he is wrong when he states: "The action of the cone belt on the bottom cone is the same with bobbin-leading as with flyer-leading. If any reader will take the trouble to examine the bottom cone in the two systems, he will be convinced. Notice how slow the bottom cone rotates in the flyer-leading frame; then notice how fast the bottom cone rotates in the bobbin-leading frame. Then let the question suggest itself; which cone belt is more liable to slip?

"Lance" also states, "It only varies and retards the speed of them (the bobbins) as can easily be proved by lifting up the cone, as when doffing, and then turning the frame over a little. It will be noticed that the bobbins turn around just the same, except that the speed now equals the front roller speed, which of course coils the roving on top of the flyer, instead of winding it on the bobbin."

I need not point out to the readers that "Lanes" is wrong in these statements. When you raise the bottom cone, the rolls are no longer a factor in the winding-on. When you raise the bottom cone in the flyer-lead frame, you increase the speed of the bobbins to that of the flyers; while in the bobbin-lead frame, when you raise the bottom cone you decrease the speed of the bobbins to that of the flyers which coils the roving on top of the flyer, the front or drawing rolls having nothing to do with it.

Wash. (Mass.)

AN OPINION ON OPENERS.

EDITOR COTTON:

In the June, 1913, issue of COTTON I asked several questions that remain unanswered. I hoped some of the readers would answer every question, for the reason that I consider every question important.

My first question was, "Why was the Creighton opener discarded by manufacturers?" Many believe the Creighton opener was discarded because the beater rolls the fibers and curls them badly. Should you ask how this is done you might be told that it is difficult to explain how it is done, but the fibers are injured and the defect is there.

The Creighton opener was discarded for just one reason, and that reason was economy. However, the results show, in my judgment, a step in the wrong direction. It will be remembered that the stock in olden times was laid on the feed aprons of the breakers by hand, and the feed, we will all admit, was not as even as it is now, also the laps varied much more in weight than at the present time. So the automatic boxes were introduced. With the automatic boxes one man could care for the same number of machines and procure a more even lap.

It is generally the amount of saving in an operation that leads mill men astray. This is only natural, but it was also the production of a more even lap that caused the manufacturers to accept the new system. However, on account of fluffy cotton, which causes much bad work, we find today that some of our expert engineers in both northern and southern mills are in favor of the Creighton opener. One of the best mill engineers in America made the following statement regarding the Creighton opener: "It will extract the foreign matter from the cotton with the least injury to the stock." This mill engineer is located in the city of Charlotte, N. C., and is considered one of the best mill engineers in the cotton industry. Is not this enough to make some of us sit up and take notice?

Instead of discarding the opener, it should have been used in connection with the automatic feed boxes, the same as a bale breaker is used at the present time. Each box should be filled automatically. Instead of putting the cotton through four beaters, there should be one beater in the breaker, one in the finisher, and the intermediate breaker discarded. Let the reader picture in his mind what takes place inside the beater box of a Creighton beater. The cotton is first conveyed to the upper part of the beater and is struck while in space, there is no metal roll in back of the stock to prevent the hard matter from being severed from the bulk of cotton. The area in which the stock is carried and the amount of air currents that play through the stock while passing from the upper end to the lower end of the beater should be enough to convince any builder or manufacturer that the cleaning efficiency of this machine has been underestimated.

"Wash." (Mass.)

A POINT FOR SLASHERMEN.

EDITOR COTTON:

While going through a mill in Massachusetts I noticed that in the slashing room the floor was in perfect condition where the racks for the full beams were, but that the floor in front and between the slashers was in a mess. In some places between the slashers there were pieces of the floor boards which I was told had been missing for over three months and in front of the slashers there were places broken and splintered by the heads of the beams as they dropped on the floor at doffing time. While it is true that the slasher tender and his helper can let the beams down easy, sooner or later the beams will get the best of the floor.

The overseer in charge of this room, took a few pieces of leather and nailed them in the place where the beams would hit the floor near one slasher only so that he could see if the leather would stand the pounding. It did, but for a few days only and then it gave way under the strain. The overseer then thought that he would substitute a piece of sheet iron for leather, but it proved a failure after breaking a few beam heads and spoiling some of the yarn on the beams.

This certain corporation only does repairing about the last of July each year and not until this time, regardless of economy or convenience,

I also know of a mill which has a strip of sheet iron on the floor in front of the slashers. This is foolishness as they are simply saving a few feet of flooring and sacrificing a great many dollars for new beam heads.

Going back to the first instance mentioned, I went over to this mill again and found the floor in the same condition. After having a long talk with the boss slasher-man I advised him to try rubber. A few days later he saw the superintendent about it, who in turn brought the boss-carpenter and had him measure off the required space where each beam head struck the floor at doffing time, allowing of course for the different rises of beams, and within a short time there were some pieces of rubber put in the floor in front of each slasher. They were set flush with the floor and then screwed down. This saved the floor and above all the beam heads, which, to the writer's mind, was a good piece of work. Furthermore these pieces of rubber have been on the floor for the last four years and are good for more years. They cost little and are doing good work.

Tab (Mass.)

MORE ABOUT BOBBIN-LEADING.

EDITOR COTTON:

In the November issue of COTTON I note "H. C. W." has much to criticize in the article on "Metallic Rolls" in the October issue. However, I cannot agree with him in these any more than I could in what he stated in his article regarding flyer-lead frames. He was unable to defend his article, in fact he confessed that he had never worked on flyer-lead frames.

In the January issue of COTTON, on page 128, he states: "In case the flyer-leading, the flyer runs faster than the bobbin and wraps the roving around the bobbin." In the next paragraph he says: "All modern fly frames are made with the bobbin leading. This method possesses many advantages over the other method, one is that while the speed of the bobbin increases as it fills with the flyer-lead, it decreases with the bobbin-lead."

In the bobbin-lead the bobbin travels faster than the flyer at all times during winding, therefore, the wear and tear must be worse on the bobbin-lead.

"H. C. W." did not go farther in the matter and point out the other disadvantages, and for one I would be pleased to have him tell us every one. He states also: "If there is any hesitation of the bottom cone, when starting, due to slippage of the cone belt, it simply slackens the ends with bobbin-lead. With flyer-lead it would break the end causing waste and loss of production." In another issue "Wash" offered a $5 check to any reader who could point out how the roving was strained by any hesitation of the bottom cone. Why is "H. C. W." silent? Why does he not try to win the $5, and also defend his article?

I see in the November issue where "Lancs" is trying to make "Wash" come across with the "root of all evil" but he spoils his chance when he admits that any hesitation of the bottom cone cannot strain the roving.

Superintendent. (Mass.)

What kind of articles would you like to see in COTTON?

Which departments interest you most?

.....

.....

.....

Name.....

Address.....

Position .....

CUT OUT, FILL IN AND RETURN THIS BLANK.

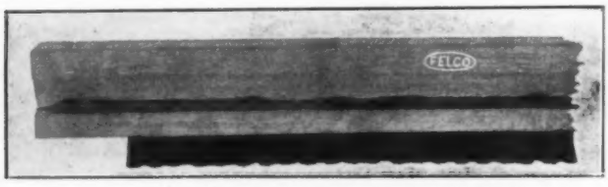
Notice. Because of the time necessary to collect data, or locate some person peculiarly fitted to write on a subject, applicants must not expect to see subjects suggested appear in the next issue. They will, however, appear in due time.

New Machinery and Trade Notes.

A New Warp Cleaning Brush.

The D. D. Felton Brush Company of Atlanta, Ga., has placed on the market a new brush cleaner known as the "Felton Warp Cleaner." This brush was designed and built especially for mills having trouble with trashy yarn or desiring to put a better looking yarn on the market. It is made to mill specifications and is applicable on any make of warper, either ball, beam, or chain.

This brush, a portion of which is shown in the illustration, is of the lag order, and the bristles, which are very stiff, dislodge all leaf trash, lumps and surplus lint. The best results are obtained by attaching the brush to the warper



frame above the yarn and with the bristles pointing downward. It is then adjusted so the bristles barely project through the yarn and the instant the trash comes in contact with the bristles it is immediately dislodged and drops to the floor under the machine.

Several mills have already been equipped with these brushes and tests on coarse and fine yarn and also on 2-ply yarn have been made with excellent results. It is stated that this brush does not chafe or "fuzz" the yarn, but on the contrary tends to brush down outstanding "fuzz" making the yarn smoother in appearance..

Gets Big Pipe Covering Contract.

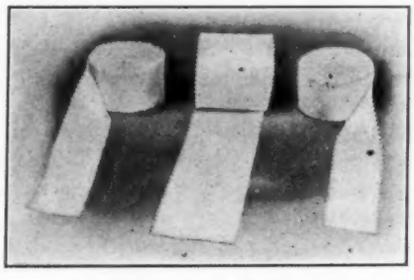
The pipe insulation contract for the new Utah state capitol at Salt Lake City, for which R. K. A. Kletting was the architect, and Jas. C. Stewart Co., contractors, was recently awarded to the H. W. Johns-Manville Company. The high pressure pipes will be covered with J-M Asbestos-Sponge felted pipe covering, a product made up of laminations of felt composed of asbestos and finely ground sponge. The materials being naturally cellular, they form the basis for the claim that this covering confines more "dead air" cells than any other covering—and therefore possesses higher heat-insulating value. The heating pipes will be covered with J-M Asbestocel pipe covering, which is built up on the arch principle. Sealed air channels run around the pipe, instead of parallel with it, thus preventing the circulation of air and consequent heat radiation.

"Steam Boilers and Boiler Feed Water" is the title of a treatise on boilers and feed waters and their scientific treatment which is being sent on request by the AMERICAN BOILER LIFE COMPANY, 19 North Market Street, Boston, Mass. This booklet, which is 5½ by 8 inches in size, is an excellent example of the printer's art, while its contents will interest anyone using steam boilers.

The Cameron Slitting and Rolling Machine.

It is worth a moment's time to consider just what features the ideal machine should possess for rolling up cloth into firm even rolls, and if desired, for dividing or slitting a web into any number of narrow widths as the goods are being rolled up.

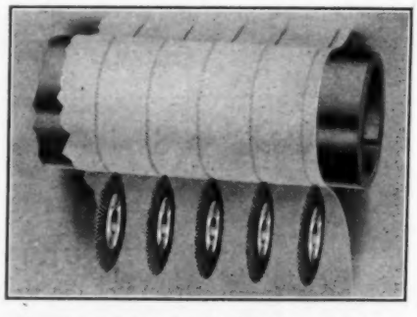
The mechanism should be simple, durable, and easy to operate. It should be quickly and accurately adjustable for any change of widths required; it should be arranged to guide the material accurately so that there be a minimum of waste on the selvage edges; it should be equipped to measure the yardage accurately as a check on waste or loss; it should be able to operate on any and every kind of fabric, and produce any width of strip required in any size of roll; it should produce firm rolls, even as to the edges, and of uniform tension without



"Cameron Process" Bandages.

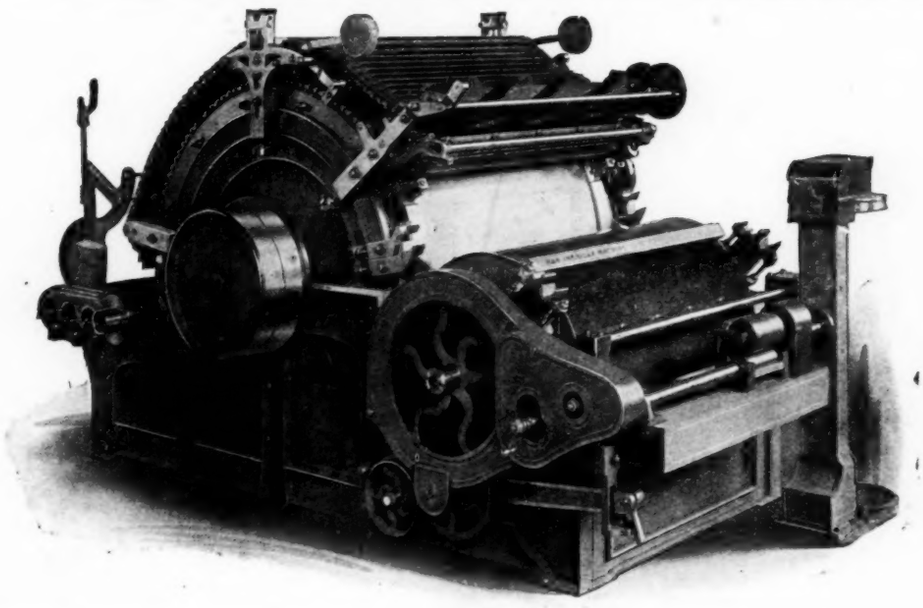
actually stretching the goods; and last but not least such a machine should be fool proof both ways, so the operator cannot hurt it, or be hurt by it.

To make a specification as broad and inclusive as that outlined, and then state that the Cameron slitting and rewinding machine is claimed to fully cover every count, is to sum up 17 years experience devoted by the Cameron Company exclusively to the making of cutting mechanism of all kinds. Their machines are the result of experience devoted exclusively to this line, and the machine which they are offering to the textile trade has the same features which have appeared in a long line of machines built by them to cover the rolling and slitting process in such industries as the paper, rubber and electrical. The machine which we describe is of wide application, and with suitable attachments can be applied to the manufacture of sur-



Cameron Principle of Slitting, Showing Special Type of Slitting Wheels for Surgeon's Bandages.

COTTON MACHINERY



HOPPER BALE OPENERS
COTTON CONVEYING SYSTEMS
LATTICE DELIVERY
AUTOMATIC CLEANING TRUNKS

FEEDERS
SELF-FEEDING OPENERS
BREAKER, INTERMEDIATE AND FINISHER LAPPERS
ROVING WASTE OPENERS

REVOLVING FLAT CARDS
DRAWING FRAMES
SLUBBING, INTERMEDIATE AND ROVING FRAMES

NEW PATTERN SPINNING FRAMES
IMPROVED TWISTERS
Band or Tape Drive

CONSTANT and conservative improvements in details of construction, close touch with actual mill requirements and conditions, and a careful selection of material particularly adapted for the building of Cotton Machinery, place us in a position to offer the best.

We invite with every confidence, all possible investigation into the construction and improved design of our machinery, and the work it is doing in the mills. The entire line of machinery is substantially built, very simple, and contains many valuable improvements.

There are many features and points of special merit embodied in our machines which it would pay you to investigate because they all stand for durability, simplicity, improved quality and increased quantity. They are not mere talking points, but money earning improvements.

H. & B. American Machine Company

BOSTON OFFICE
65 FRANKLIN STREET
C. E. RILEY, Pres.

Pawtucket, R. I.

SOUTHERN OFFICE
814-815 EMPIRE BUILDING
ATLANTA, GA.

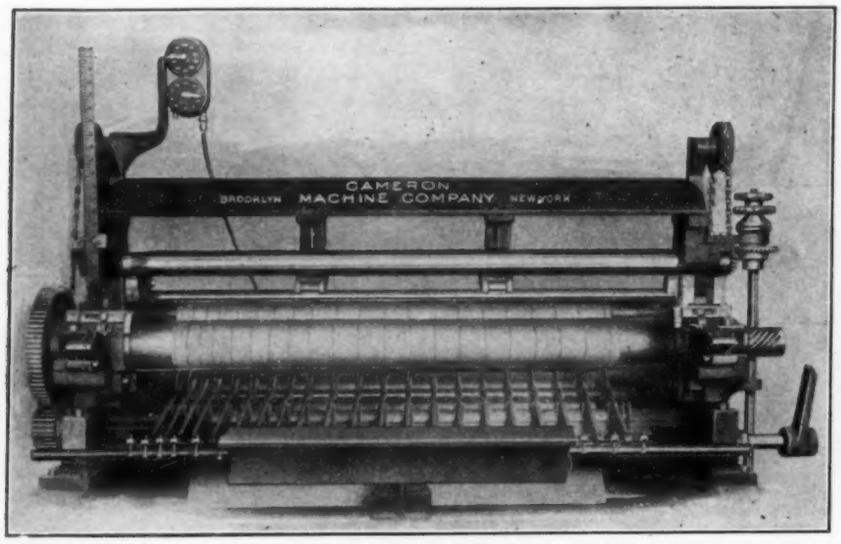
geons' bandages, cotton batting, typewriter ribbon, insulating tape, etc. The same style of machine is used in rubber mills and paper mills where quantities of goods are put up in roll form, and it is also used in the manufacture of cloth and burlap bags, tents, awnings, flags, and seam binding for the clothing trades.

In leading up to the present machine they naturally made and tried out a number of different slitting and rewinding methods, some suited to one kind of work and some to another, but they were never able to obtain the present high standard of quality and quantity of product until the method here described was developed.

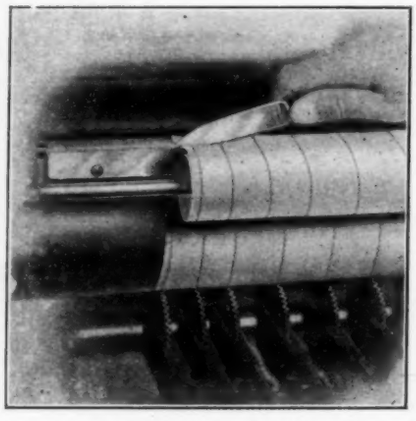
"In our search after thoroughly satisfactory methods," says Mr. Cameron, "we have employed at one time or another every possible method of doing the slitting, such as drawing the web forward against a keen thin blade placed in its path, which would 'split' the web at intervals making the strips of any width required. This splitting method was, however, not satisfactory on account of the frayed edges thereby produced. Another former method was to employ a thin steel disc clamped between two collars and revolved at great speed so that the edge acted like a circular saw and divided the web into widths according to the spacing between the discs. Another method was to arrange discs of a more substantial form in pairs, with the edge of each disc slightly overlapping the other, so as to form a kind of rotary shear. This rotary shear method along with the others mentioned had some good points, but it could not be relied on, as in each case the cutting edge would not remain keenly sharp, and consequently rough cutting, or no cutting at all soon resulted, making it necessary to keep the edges always perfectly sharp, which in many cases was not practicable.

"Several years ago we worked out a method of doing the slitting which was free of the defects of all the other methods previously employed by us. It consisted in the use of a cleaving or scoring wheel, which actually presses through the material rather than cuts through it. This scoring wheel is a circular disc having a V shaped edge slightly blunt, mounted on a ball bearing center, and pressed with a spring pressure against a hardened steel cylinder having a highly polished smooth surface. This method has given results which left nothing to be desired in point of speed, accuracy and clean work, together with practically no bother of up-keep."

It was only a step further for the Cameron Company to make a slitter wheel with a zigzag edge so that the strip produced would have a scalloped edge, and this one step led to the Cameron process of producing surgeons' bandages, which has been covered by patents here and in Europe. Strips so cut would not fray at the edges and needed no further attention after the cutting had been done, which fact eliminated all of the succeeding processes necessary in producing surgeons' bandages, with the result that goods

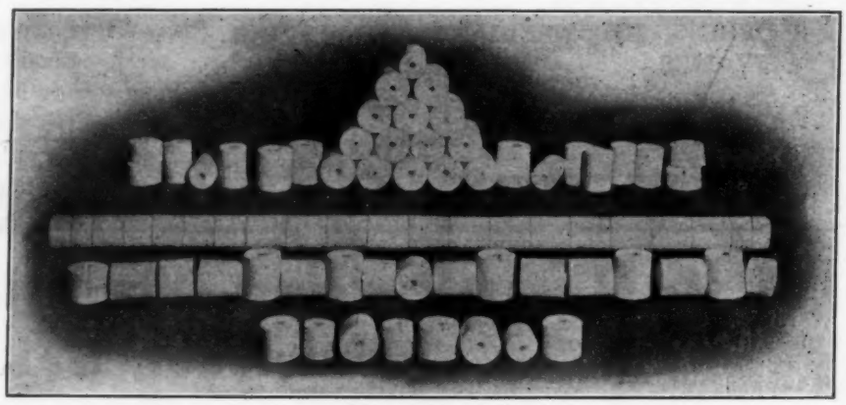


Upper structure of Cameron Machine, Showing Slitting, Rewinding and measuring Apparatus.



Method of Severin Ends of Fnished rolls of Bandages on Removing from Machine.

Bandage Slitter Wheel Mounted, Showing Method of Holding or Spacing Same.



Examples of Cameron Slitting.

Barrett Specification Roofs

A Modern Shop and a Modern Roof

HERE is a picture of The Barrett Specification Roof on the big new shop of the Illinois Steel Company in Chicago, laid over a concrete deck.

Cut through this roof at any point and you will find six layers of pitch and five of felt, For the method of procedure in the laying of the roof is so carefully defined in The Barrett Specification that, if it is followed, it is not possible to find any spot in the roof which does not have its full quota of pitch and felt.

This type of roofing was selected for the building because its first cost is lower than that of any other permanent form of roof covering and the cost of maintenance is absolutely nothing.

This combination of low first cost and no maintenance cost explains why there are *more* Barrett Specification Roofs on permanent structures than any other kind.

Another important feature is the fact that Barrett Specification Roofs take the base rate of insurance. In case of fire from within they form a continuous air-proof fire blanket.

All first-class structures, such as city dwellings, office, railroad and commercial buildings of all kinds should have Barrett Specification Roofs as a matter of real protection and sound economy.

HYDRONON
The Damp-Proofing Paint

Especially recommended for use above the ground level on the interior of stone, brick or concrete walls to exclude dampness.
Has superior covering capacity and is vastly superior to other paints in its permanence and resistance to dampness. Booklet on request.

Tar-Rok Sub Floors

This construction provides the most suitable surface on which to bed plank (without the use of sleepers) where a wooden lower floor is desired in factory, machine shop, store house, etc., effecting a maximum of strength, rigidity and protection against dry rot, decay or fire, at a nominal cost. Booklet on request.

A copy of The Barrett Specification, with Roofing diagrams, free on request.

Special Note We advise incorporating in plans the full wording of The Barrett Specification, in order to avoid any misunderstanding. If an abbreviated form is desired, however, the following is suggested: ROOFING—Shall be a Barrett Specification Roof laid as directed in printed Specification, revised August 15, 1911, using the materials specified and subject to the inspestion requirement.

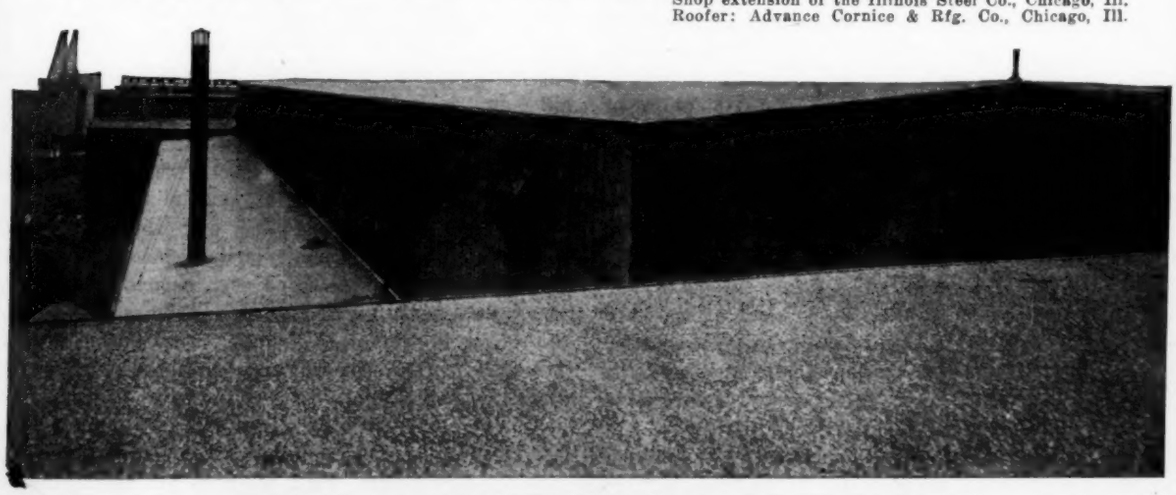
BARRETT MANUFACTURING COMPANY

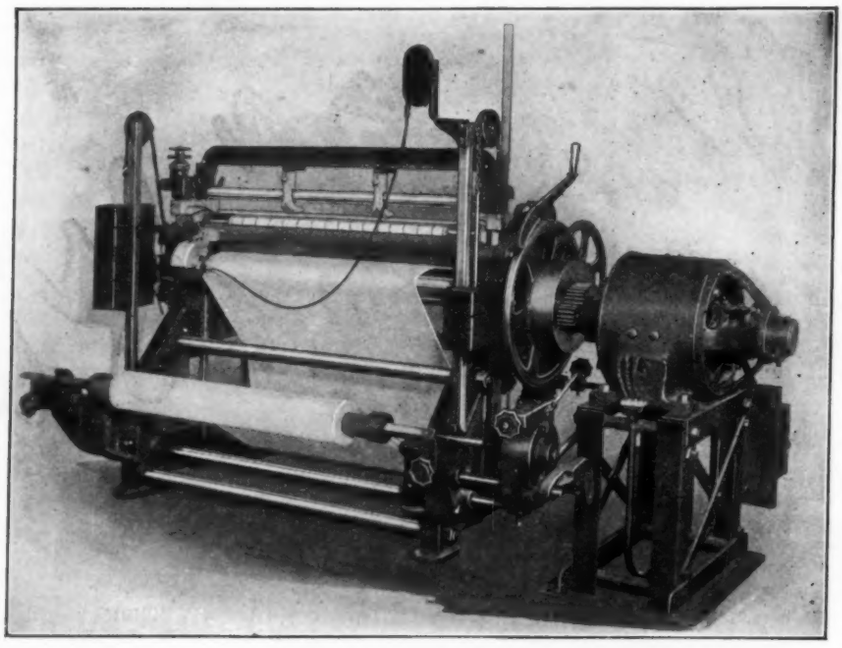
New York Chicago Philadelphia Boston St. Louis Cleveland Cincinnati
Pittsburgh . Detroit Birmingham Kansas City Minneapolis Salt Lake City Seattle

TRADE B MARK

The Paterson Mfg. Co., Limited: Montreal, Toronto, Winnipeg, Vancouver, St. John, N. B., Halifax, N. S., Sydney, N. S.

Shop extension of the Illinois Steel Co., Chicago, Ill.
Roofer: Advance Cornice & Rfg. Co., Chicago, Ill.





Cameron Slitting and Rewinding Machine (Rear View).

could be delivered to the machine and at one single process be converted from the piece form into finished surgeons' bandages in rolls.

The Cameron principle of slitting has practically no limit as to speed. The edges of the slitter wheels require very little attention, as the edge is not maintained sharp and keen, but rather resembles that of a cold chisel, which is slightly blunt. The operator takes entire charge of the machine, and also keeps the slitter wheels in good working order. Possibly an hour or so per week covers all maintenance work. The surface of the cutter roll is not in any way affected by the slitter wheels, and it requires no attention whatever, as it is impossible to destroy the surface of the cutter roll, or to mar it with grooves. Modern requirements in the manufacture of steel have made this result possible.

The rewinding apparatus which rolls up the goods following the slitting is of a type known as the "drum" or "surface rewind." The apparatus consists of supporting rolls of which the cutter roll is one, together with the riding roll, which presses upon the upper surface of the coils and holds them in uniform contact with the supporting rolls, and by revolving at a higher rate of speed insures that the rolls are wound up firmly and snugly, thereby producing a very firm, compact coil without stretching the web. The supporting rolls are spaced close together and rotate in the same direction, so that the coils resting on them will be caused to rotate at a uniform surface speed.

Goods can be rolled up without any slitting, and the machine is frequently used to roll goods on account of the high speed and accuracy obtainable. When the goods are both slit and rolled, the fabric passes between the cutter roll and slitter wheels and is severed into strips of the desired widths, and these strips go forward side by side to be rewound on the rewinding shaft or mandril without any possibility of one strip overlapping the edge of another. When the operation is complete the rewinding shaft or mandril is withdrawn, and the separate coils are in finished form and ready for delivery.

Mr. Cameron says that "the building up of this process has been step by step, and every feature in it has stood the test of time. Our policy is to deliver our machines subject to trial by the prospective customer, and allow the machine to win out on its own merits by proving that it is a labor saver; that it produces better work than has heretofore been considered possible; that it operates with a minimum waste; and above all, that it pays the user to deliver goods in just the form the customer requires, particularly, when to do so is such a simple operation."

Machines are on hand for demonstration purposes at the show rooms of CAMERON MACHINE COMPANY at their factory, 57-61 Poplar Street, Brooklyn, New York, where the bandage process can be fully illustrated, and the facts regarding other lines that might interest the textile manufacturer demonstrated.

The GRAPHITE LUBRICATING COMPANY, of Bound Brook, N. J., have been so successful with treated wood saddles that they have brought out a number of new styles, giving a much finer adjustment than any heretofore made by them. These saddles do not require the use of oil, thereby making a triple saving to the company using them. The time lost in oiling is eliminated, the first cost of the oil is also eliminated and inasmuch as no oil is used in lubricating these saddles, the difficulties heretofore encountered in the way of oil stains is also taken care of. They now advise that not only are they in a position to furnish standard saddles, but if any mill will send them a sample of the saddle being used, they can make a special saddle of the treated wood to replace those of the old style.

It is also of interest to note that this company is getting out a new general catalog descriptive of their "Nigrum" and "Boundbrook" bushings which they expect to have ready for distribution early in January. This catalog, which is a little more elaborate than anything they have heretofore issued, will be sent on request to any interested mill man.

For some months the BUFFALO FORGE COMPANY have been developing their Niagara Conoidal type fan. It has been their ambition to put out a unit which will stand in a class by itself for durability and efficiency. In this they feel that they have succeeded even beyond their expectations. As an example of what these fans can do they refer to the No. 17 Niagara Conoidal fan recently installed at Cheney Bros. Silk Mills in South Manchester, Conn. Careful test made during the week of November the 16th showed a delivery of 45,000 cubic feet of air per minute through the resistance of a humidifier, heating coils and ducts, with only 3⅓ horsepower, which included the bearing and belt losses. The Buffalo Forge Co., think this comes very near to establishing a record.

THERE IS
NO RUBBER
IN THE COMPOSITION
OR PRONUNCIATION OF
RU-BER-OID

¶ This great roofing has a good name and deserves to have it pronounced correctly.

RU-BER-OID
PRONOUNCED
"RU" AS IN RUBY
ALWAYS SPELLED WITH
ONE B

¶ RU-BER-OID Roofing has weathered the storms of over 22 years, and the onslaughts of imitators for almost as long.

¶ RU-BER-OID has been to the South Pole with Captain Scott and to the North Pole or thereabouts with various other explorers.

¶ And to all intermediate points has RU-BER-OID gone—invairably doing what is claimed for it.

¶ KA-LOR-OID (colored RU-BER-OID) is the same durable material with the added attraction of beautiful and permanent colors—Tile red—copper green.

Send for Samples.

The Standard Paint Company

100 Williams St. **New York**

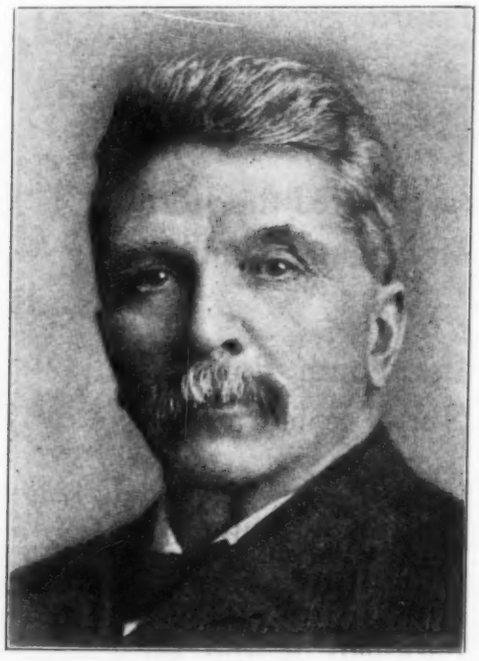
For Leaky Cellars & Pits
IMPERVITE
is GUARANTEED to Waterproof

Gilbert McIntire Parks.

Gilbert McIntire Parks, founder of the G. M. Parks Co. at Fitchburg, Mass., and one of that city's most prominent business men, died recently in a hospital at Brookline, Mass., in his 73rd year, from the effects of an operation. Mr. Parks was a home-loving, hard-working man, distinctly typical of that sturdy independent and self-reliant manhood so often seen during the first three quarters of the 19th century.

In 1872, at the age of 30, having previously learned his trade, he formed a co-partnership with John H. Carpenter. With few changes—the buying out of Mr. Carpenter in 1886, and its incorporation in 1901—the business has since continued and still continues to bear the impress of his personality.

He not only knew how to work, but he knew how to direct his own labor and that of others. He never sepa-



THE LATE GILBERT M. PARKS.

rated head and hand,—the dangerous mistake of this present epoch, as well as many another period of human history; his word was responsible to the fullest degree; and he "minded his own business." Those who worked with him had little need, probably, for further exercise at the close of the day, and those who trusted him felt secure. His many years of life were filled with the labors of one who worked "for the joy of working," one who didn't know how to do poor work. And when the days of illness and trial came, the fortitude of his spirit bore him through.

Mr. Parks retired from active business in September, 1911, on account of poor health. Besides his widow, he is survived by two daughters and three sons, Robert S., Frederick W. and Howard M. Parks, all of whom are members of the G. M. Parks Co.

Inquiries about anything pertaining to the textile industries will be cheerfully answered by COTTON.

Safety First in the Card Room.

Belt shippers for cards are coming into use more at present than ever before. Some state laws demand that they be used on all cards, and many mills are looking into the subject.

The SACO-LOWELL SHOPS are prepared to furnish shippers to meet any set of conditions and have recently issued an illustrated circular on this subject. One of these shippers has been recently designed and patented by them, and comprises the novel feature of having a ball binder which is pressed against the belt by means of a lever, as the belt is shipped from the loose pulley to the tight pulley. This takes up the slack belt, causes the cylinder to come to speed more quickly, and entirely does away with the necessity or temptation for a man to put his hand onto the belt.

Another shipper was designed for cases where it is necessary or advisable to ship the belt without going between the cards. Where cards are placed closely together this shipper has been found to be very desirable.

All styles of these shippers can be easily applied to almost any make of cards, and they are furnishing large numbers of them for cards not of their own make.

A copy of the circular in question showing the application of these belt shippers may be secured from the executive offices at 77 Franklin street, Boston, or from Rogers W. Davis, Southern Agent, Charlotte, N. C.

A Christmas Card.

On December 25th the CRANE COMPANY supplemented their usual Christmas distribution with a Christmas card having on one side a picture of the office building at their factory and the words "Crane Co. wishes you a Merry Christmas and a Happy New Year," while the reverse side carried the following statement:

"To the Employees of Crane Co:

"During the past year business has been very much depressed all over the country and we have experienced great difficulty in keeping the plants running even on short time.

"As the supply of labor exceeded the demand in nearly all localities and men laid off would undoubtedly have trouble in finding employment, it has been our aim to keep the full force going, but it was necessary to shorten the hours, as we could not find a market for the quantity of product turned out under full running time.

"It is hardly necessary to say that the Company does not make much money when the shops are partially shut down, and the usual Christmas distribution is not warranted by the condition of business; but the president and directors feel that this distribution will meet a greater need this year than it would under normal conditions and have authorized the payment of the usual amount.

"The Company wishes you a Merry Christmas and hopes that the coming year will be more prosperous."

THE GOULDS MANUFACTURING COMPANY, one of the largest manufacturers of triplex, centrifugal, hand and spray pumps, has just announced the opening of a new office in Atlanta, Ga. This office will be located in the Third National Bank Building and will be in charge of O. B. Tanner, District Manager.

50% Better than ever from YOUR Standpoint

SEVERAL NEW FEATURES have been added to the "1912" Cloth Cutting, Folding and Winding Machine which add at least 50% to its value to YOU.

It will cut your cloth—fold the edges—roll it up and give you an exact measurement of every piece of cloth going through the machine.

It saves time, labor, machines and cloth.

YOU ONLY NEED ONE MACHINE where before it required two, and you get an extra strip from every bolt of cloth.

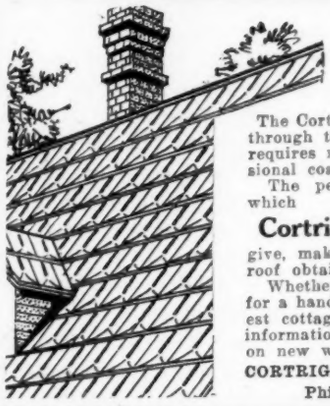
It cuts the corners of expense in every way and leads to more and greater profits.

THE ENORMOUS SAVINGS WILL INTEREST YOU.

Mail a card for complete information and prices.

When in need of special machinery, write me.

J. A. FIRSCHING, 614 Broad St., Utica, N . U.S.A. Dept. "C."



The Permanent Roof

The Cortright roof remains unchanged through the passage of the years and requires no attention beyond an occasional coat of paint.

The perfect, permanent protection which

Cortright Metal Shingles

give, make them the most economical roof obtainable.

Whether you have in mind a roofing for a handsome dwelling or for a modest cottage, you should write for our information on roofing before deciding on new work or repairs.

CORTRIGHT METAL ROOFING CO.
Philadelphia and Chicago

ARE YOU THOROUGHLY SATISFIED WITH YOUR PRESENT METHOD OF

WASHING

LET US TELL YOU THE ADVANTAGES OF USING **ALUMINA SOAPALITE**

THE ELECTRIC SMELTING & ALUMINUM CO.
LOCKPORT, N. Y
Sole Manufacturers.

Clinton H. Scovell & Company
Certified Public Accountants
Industrial Engineers

110 State St. CHS&C CERTIFIED PUBLIC ACCOUNTANTS MASS AND NEW YORK Boston, Mass.

Textile Cost Accounting

Have You Figured Out Shuttle Cost?

Are you still buying shuttles on the **cost per shuttle basis?** Or have you started to buy them on the **basis of service performed?** If you are buying on the second plan, the chances are you are using

Shambow Shuttles

They are purposely designed so as to weave more yards of well-woven cloth at a minimum shuttle expense per yard. Send us a sample shuttle with a completely filled bobbin and have us design for you an efficiency shuttle to meet your requirements.

SHAMBOW SHUTTLE COMPANY

Woonsocket, **Rhode Island**

Calendar Notices.

The MORRIS MACHINE WORKS at Baldwinsville, N. Y., are sending to the trade a very handsome panel calendar which is a photo-color reproduction from an original painting by William J. Whittemore entitled "In the Garden of Dreams." In this painting the artist combines with personal expressive beauty, magnificent color effects in dress and background indicative of his extended water color studies. Attached to this reproduction is a calendar pad in a slate gray color to match the background of the picture and of a suitable size for efficient use.

Perhaps the most complete and convenient calendar seen in a long time is being distributed among his customers and friends by James H. Maxwell, of Greenwell, S. C., Southern agent for the KEEVER STARCH CO., of Columbus, O. This calendar, which is of the daily leaf variety, carries a tab card for each month in the year, on which is printed in light face type the entire number of days of the month, above which appears a single sheet for each day, which not only gives the day of the week and month, but also gives the other days of the month, in light faced type, which have preceded that day. This calendar is easily adapted to the making of notes, as are many of the loose-leaf calendar styles, but it also acts as an automatic "tickler" record for the many necessary things a business man needs to remember at exactly the proper time. Incidentally this calendar is also an excellent advertisement inasmuch as it reminds its user every day in the year that he receives this unique silent helper with the compliments of the manufacturers and the representative of Victor Mill Starch.

The most artistic calendar received up to this time has just reached the editorial desk with the compliments of the ACME KNITTING MACHINE AND NEEDLE COMPANY, Franklin, N. H. It is entitled "In the Merry Month of May" and carries a suitable annotation in the form of a quotation from Margaret E. Sangster from whose poem its title was derived. The color scheme of this Osborne art calendar is white and green, the white embossed sheet bearing the calendar pad is attached to a green art paper back ground with ribbon. Suitably located on this sheet is a reproduction of a New England apple tree in full bloom. This print is colored by hand and is surrounded by a delicate green border. Embossed on the cover of the calendar pad are these words, "'Your heart's desire be with you.'

The Acme Machine & Needle Co. are to be congratulated on the artistic perception expressed in the selection of this calendar.

With the coming of the new year comes the well known and always looked for calendar of the DRAPER COMPANY, at Hopedale, Mass. The background this year is green, with an ornamentation of white cotton bolls. The upper part of the card bears a reproduction of one of the latest styles of Northrup automatic looms, while the front of the calendar pad depicts the art of weaving in the days gone by, with the old foot-power loom, spinning wheel, the hand-braided rug and other old-time relics so often seen carefully preserved in many New England homes of the present day. These methods of long ago contrast strongly with the up-to-the-minute machine for weaving illustrated immediately above.

BOOK REVIEWS

All Books Reviewed Under This Heading May Be Procured From COTTON at the Published Price.

TEXTILE DESIGNS. By Fenwick Umpleby. 368 pages. 350 illustrations. Half morocco binding. Price $2.00. Published by the American Technical Society, Chicago.

This book was intended by its author to be a working manual of approved practice in all the details of the art of designing the various kinds of textile fabrics, together with practical applications of the principles of textile coloring and systematic methods of cost finding. The work covers all details from the use of design paper and other mechanical aids, the principals of drafting and reduction and the designing of the simplest fabrics, to the most complicated application of the principals of textile coloring and the production of the most elaborate designs of special fabrics. It has been prepared with especial attention given to self instruction and home study and will be found of much interest for those desiring information on this branch of the textile industry.

DOCKHAM'S GLOVE AND MITTEN MANUFACTURERS REPORT AND DIRECTORY for 1915. 24 pages. Price $1.00. Published by the Dockham Publishing Company, Boston, Mass.

This report and directory is the fourth edition devoted to glove and mitten manufacturers. It contains the different kinds of gloves and mittens manufactured, the number of sewing machines in each plant, the kind of power used, whether or not the plant has New York City offices, and whether or not they sell to jobbers or retailers. These plants are alphabetically arranged by states, cities and firms with the street and number being given. It is especially compiled for the use of glove and mitten buyers and manufacturers as well as manufacturers and dealers in machinery and supplies for plants of this character.

Textile tables is the title of a very interesting booklet compiled by the UNITED STATES CONDITIONING AND TESTING COMPANY, 340 Hudson St., New York City, for use in its testing laboratories and for the assistance of its patrons. This book includes fundamental and derived units, tables of equivalents, comparative and international yarn tables, systems of counts and other information of use to the textile industry of the United States. This book is in its third edition. It may be secured for the very nominal sum of 25 cents.

A very convenient little vest pocket memorandum book, substantially bound in leather and containing calendars for 1915 and 1916, is being presented to the weaving branch of the trade and also to superintendents. The memorandum pages will be very convenient for making notes, while other pages are inserted describing the material manufactured by E. H. JACOBS MFG. CO., Danielson, Conn., who are distributing this holiday novelty. Just ask for the "pig-skin" booklet.

THE TEXTILE year is divided abruptly into two distinct parts—the Fall and Spring Seasons.

Every merchant knows by December first the initial amount he is to ship to each customer for the Spring Season.

Very few merchants, outside of the National subscribers, know exactly how each one of these customers has paid his bills due from September first to December first, or in fact knows that the Fall payments have been made at all.

No merchant, excepting the National subscriber, has any knowledge of the total number of orders placed by each customer.

The idea of checking credits on net worth and financial statements is a myth.

The National Credit Office has eliminated this statement myth from its calculations in the majority of credit risks. No one is in a position to know, without actually auditing a concern's books, whether the figures in the statement are approximately correct or not, but everyone using the National Service is in a position to know exactly how any concern is paying its bills and the approximate amount of orders placed.

No concern paying its bills promptly and buying normally will go into bankruptcy and not pay very nearly one hundred cents on the dollar.

While it is true that a concern's statement or claimed net worth may have a qualifying effect on the line of credit and terms to be granted, the main consideration—line of credit and terms—must be based upon the earning power, and this can only be determined on a basis of the known facts—orders and payments.

The National Credit Office has a new system of automatic unlimited service, which eliminates all possibility of loss by bad debt.

The terms for the service are based on the number of accounts.

The plan is of extreme interest to any concern selling the Textile Industry.

Write today for prospectus

National Credit Office

50 UNION SQUARE, NEW YORK CITY

"The fuses that save 80% per year" are the logical fuses for you to use—

ECONOMY renewable cartridge FUSES

are giving positive electrical protection and cutting fuse maintenance 80% in great industrial plants, central stations, mines, department stores, steam and electric roads, etc.

ECONOMY renewable cartridge FUSES are the only renewable fuses uniformly rated—the Economy design is the only design so far produced that provides the desired electrical characteristics. All capacities of renewal elements are readily available, making large fuse stocks unnecessary. ECONOMY renewable cartridge FUSES never vent fire nor hold a sustained arc—they are absolutely safe. Now available in knife blade and ferrule types.

Special Announcement

Two renewal elements are now furnished (without charge) with each Economy fuse. Now you figure what fuse is the cheapest, not only to buy, but also to maintain.

Bulletin No. 7 and Samples on Request. Write now

Economy Fuse & Mfg. Company, Kinzie & Orleans Street, Chicago, Ill.

KNITTING MILL NEWS.

Notices of mill projects, additions or improvements are solicited for this department. Other notices pertaining particularly to the Southeastern section will be found in the Southern Mill Situation review.

CONNECTICUT.

NAUGATUCK. The Dunham Hosiery Co. is operating its local plant and the one at Rainbow, Conn., overtime. Most of the work is on underwear for the foreign market.

MANCHESTER. The Glastonbury Knitting Co. is operating its plant on a full time schedule filling domestic orders.

ILLINOIS.

ROCKFORD. The Rockford Mitten & Hosiery Co. is reported to have a big contract with a London firm for a supply of heavy socks.

MICHIGAN.

MARQUETTE. An underwear manufacturer from the East is reported to have been in this vicinity, investigating with a view to the establishing of a knitting plant in this section.

NEW YORK.

BROADALBIN. For some few weeks the knitting department of the Broadalbin Knitting Co. have operated night and day.

GLOVERSVILLE. The Gloversville Knitting Co. is reported to have been busy for a number of weeks getting out orders for socks and gloves for armies in Europe.

NEW YORK. Max Mayer & Sons Co. are reported to have closed contracts with the English and French governments for a large sweater and wristlet order.

UTICA. Unusually fine conditions prevail in this section of the knitting industry, and three mills are working day and night on large orders for war goods.

VALATIE. Local report is current that an Albany manufacturer is negotiating for the purchase of the Valatie Knitting Mill, which he intends to reopen. The former owners of the plant were the Standard Manufacturing Co.

PENNSYLVANIA.

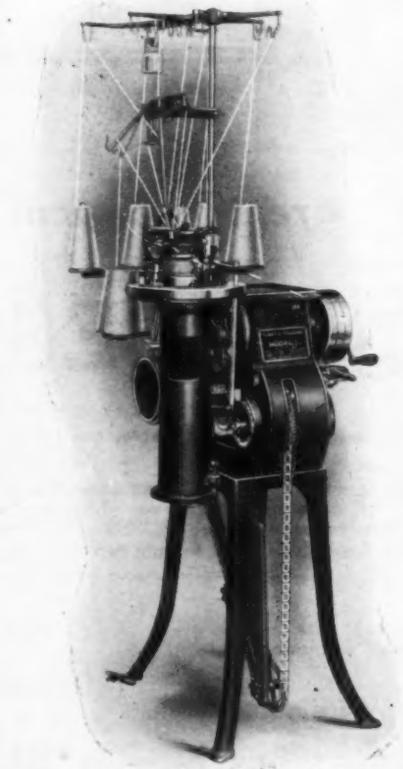
CARBONDALE. The Carbondale Knitting Mills have completed an addition to their plant which more than doubles the capacity, and they intend to begin work soon on another addition. They are ready to fill all orders and expect to put out more lines than ever before.

NAZERETH. The Nazereth Hosiery Company has been incorporated to manufacture, buy and sell hosiery with a capital stock of $15,000. Fred Wunderly of Nazereth is one of the incorporators.

PHILADELPHIA. On December 14 application was made for a charter for an intended corporation to be known as the Concordia Silk Hosiery Co., which will manufacture and sell hosiery.

PHILADELPHIA. Under the title of the Victor Knitting Mills, Louis Rubin, at one time with the United Knitting Co., has started a mill on Market street, where infants' sweaters and specialties will be manufactured.

READING. The Mount Penn Underwear Co. have orders ahead to keep the plant busy for a number of months. They are running on a 90 per cent basis, not having fallen below that during the past 10 years.



Is there an abundance of skilled labor for topping in your locality? If so you are fortunate.

If not, you should investigate our MODEL F machine, which produces half hose without skilled labor at a saving of from 7 to 15c per dozen, and makes women's stockings with a knitted turned welt, dropping both from the machine.

Established 1865

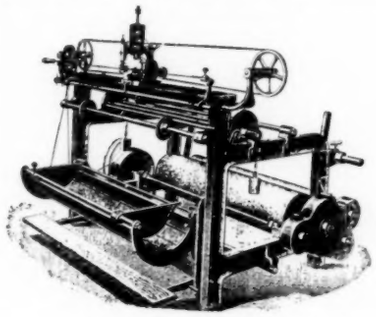
Scott & Williams, Inc.

88 Pearl Street
BOSTON

NEW YORK UTICA

Opening and Winding Railway Sewing Machine

(With Singer Type of Sewing Head.)



This machine is used by nearly all leading cotton mills throughout the country, there being no other machine manufactured that will put the cloth in such perfect condition to run through the brushing or shearing machine, or to send to the bleachery.

It receives the cloth from the loom, unwinds, sews, and rewinds the cloth into a roll of 3000 yards or less. It keeps the cloth clean and free from wrinkles, makes a hard, straight roll for the shears, brushing machine or for shipment to the bleachery.

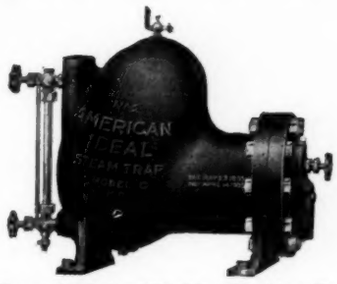
Occupies five feet floor space and handles from 500 to 600 cuts or pieces of cloth per day.

More information?

DINSMORE MFG. CO., Salem, Mass.

The American Ideal Steam Trap

IS THE TRAP TO USE FOR HIGH PRESSURES



Floats Guaranteed for 300 Lbs. Working Pressure.

Powerful Leverage—Permitting the use of Heavy, Long-Life Floats—Absence of All Flat Surfaces—No Trouble-Feeding Parts—These are just a few features of this high-grade, modern steam trap.

The valve is water sealed and has two bearing alignment which absolutely guarantees perfect line-up of valve and seat.

End **your** steam trap problems by installing AMERICAN IDEAL TRAPS.

Write for Special "Specification Data."

American Steam Gauge & Valve Mfg. Co.

BOSTON

Chicago New York Atlanta Pittsburgh

Leigh & Butler

232 Summer Street, Boston, Mass.

Sole Agents in the United States and Canada for Platto Bros. & Co., Cotton Machinery.

COMPLETE MILL EQUIPMENT

Patent Barchant Machinery for Making Yarn from Cotton Waste, Etc.

DIXIE SPINDLE & FLYER CO., Inc.

Expert Overhaulers and Repairers

COTTON MILL MACHINERY

CHARLOTTE, N. C.

DOBBINS SOAP MFG. CO.

PHILADELPHIA

Makers of the Celebrated

Dobbins Cotton Softener

Also

Olammon

(A concentrated Scouring Compound)

and

DOBBINS ELECTRIC MILL SOAPS

Working Samples Cheerfully Furnished Gratis.

JOHN D. LEWIS

Manufacturer of

Logwood Extracts & Hematine

Providence, R. I.

A Cotton Truck That Will Last.

Managers of cotton mills and those who have had experience with the daily working of cotton cloth in bales fully appreciate the number of times they are delayed in this work by the breaking down of some of their trucks, leaving them relatively short handed. THE EDWARDS MFG. CO., of Cincinnati, Ohio, who have had a practical experience covering a period of over 30 years in working iron and steel, realizing the difficulty so often met with in the way of broken truck handles, broken cross bars, loose wheels and axles, and other similar difficulties, decided to design a practically indestructible steel truck. This truck is strongest where the old style wood frame trucks are weakest. It is a truck built on a different principle; a principle that makes it so durable and substantial that the use of old methods can now be counted upon only as an extravagance. It is claimed that this truck under ordinary business conditions in handling cotton, will pay its own cost in a year's time by its saving in breakage and upkeep expense. One continuous piece of U shaped frame supports the wheels in a most substantial and durable manner. The upper part of the continuous U frame gives perfect rigidity and strength. This makes a truck which will stand jolts and strains such as no mortised woodwork could undergo. The continuous frame is of angle steel, the metal work thoroughly riveted together, and the short handle bars, which are quickly detachable and which are the only wooden parts of the truck, are made of the best selected straight grain timber, steam bent. An illustrated folder of this truck may be secured by applying to the manufacturers.

Factory Control from the Executive Desk.

Nothing saps the manufacturer's profit so deeply as the idle time of his machinery. The fundamental law of success in running any business is to know what is going on all the time. SLOCUM, AVRAM & SLOCUM, INC., are managing engineers located at 30 Church street, New York City. As managing engineers, their aim is to increase the output of factories. In their efforts to get absolutely true records of what different machines actually do, they found it necessary to create an instrument which has proved so novel and so reliable that it has attracted the favorable attention of many manufacturers, and has decided this firm of engineers to become manufacturers of the instrument for general sale under the name of the Productograph.

The Productograph furnishes an absolutely accurate and permanent record of the operations and working of all machinery to which it is applied. It will show at a glance if a machine is working, the exact time it commenced to work, when it stops, how often and how long to the very minute. By means of this instrument it enables the manager to fix the responsibility for delays, lost time, excessive time for make-ready and other difficulties. It may be placed in the private office where the owner or manager can see and know at any minute exactly what every machine has done and is doing and the records being reliable and permanent may be filed and used for figuring costs, thereby making a saving in the amount of clerical labor necessary. Especially valuable is the comparison of results to be obtained by means of these charts between two different makes of machine of the same class, and also between day and night shifts running the same machine on the same class of work.

Slocum, Avram & Slocum, Inc., have issued a very interesting illustrated booklet describing the Productograph, giving samples of charts with explanations as to the reading. Also illustrations of different types of instruments, in some instances showing their application. Many a costly addition to a mill has been avoided by securing from the present equipment the full maximum production possible. Any mill manager who is not absolutely certain as to the exact result he is getting from every machine in his mill in relation to the maximum capacity, will be interested in reading this booklet which bears the same title as the caption to this notice and may be had on request.

We illustrate herewith the new headquarters of the STUART-HOWLAND CO., corner of Congress and Purchase streets, Boston. The growth of the business of this company as a distributor of electrical supplies, since its beginning fourteen years ago, has been quite phenomenal and its recent move indicates further expansion notwithstanding

the general business depression. This new building, six stories and basement—with both freight and passenger elevators—gives ample space for the present and at least for some time in the future and is admirably adapted for the quick and efficient handling of goods which should tend to make shipments even more prompt than in the past.

There are still some textile manufacturers who use tallow as a softener. They should try the soluble softening oils, made by THE ARABOL MFG. CO., 100 William St., New York. They may be astonished at the smooth finish of the warps, the easy parting of the threads in the lease rods, the bright and clean appearance of the slasher cylinders. Especially fine results are claimed with close woven goods, such as corduroys, velveteens, sateens, umbrella cloths, cambrics, etc. The seasons have no influence on soluble softening oil; it remains sweet, uniform and pliable summer and winter. It is neutral and easily blended.